

THE ANCIENT GREEK ECONOMY

MARKETS, HOUSEHOLDS
AND CITY-STATES

EDITED BY EDWARD M. HARRIS,
DAVID M. LEWIS
AND MARK WOOLMER



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THE ANCIENT GREEK ECONOMY

The Ancient Greek Economy: Markets, Households and City-States brings together sixteen essays by leading scholars of the ancient Greek economy specialising in history, economics, archaeology, and numismatics. Marshaling a wide array of evidence, these essays investigate and analyse the role of market exchange in the economy of the ancient Greek world, demonstrating the central importance of markets for production and exchange of goods and services during the Classical and Hellenistic periods. Contributors draw on evidence from literary texts and inscriptions, household archaeology, amphora studies, and numismatics. Together, the essays provide an original and compelling approach to the issue of explaining economic growth in the ancient Greek world.

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PREFACE

The origins of this book lie in a conference entitled “Beyond Self-Sufficiency: Households, City-States, and Markets in the Ancient Greek World,” held in St. John’s College, Durham University, on July 2–5, 2011, organized by the editors of this volume. This meeting could not have taken place were it not for the generous support of Department of Classics and Ancient History and the Faculty of Arts and Humanities of Durham University. We would like to thank Sue Hobson and the team at St. John’s College for their assistance in running the conference.

The rationale behind the conference lay in dissatisfaction with the belief found in many scholarly studies that the Greeks cherished a notion of autarky that profoundly influenced economic behaviour, in particular minimizing engagement with markets and market exchange. Although the conference was not conceived with a view to publication, it became apparent that many of the participants found this approach inadequate to explain the evidence from the ancient Greek world, and that a volume challenging this view from a number of different vantage points would be valuable. We then submitted a proposal to Cambridge University Press and received positive and helpful reports from two anonymous referees. Vasia Psilakakou did a splendid job proofreading the entire manuscript before we sent it to the press. Finally, we would like to thank the team at Cambridge University Press in New York for their expert assistance in preparing the volume for publication.

INTRODUCTION

Markets in Classical and Hellenistic Greece

Edward M. Harris and David M. Lewis

In Aristophanes' *Peace*, two craftsmen approach Trygaeus, the protagonist of the play, shortly after he has secured an end to the war with the Spartans. Both are overjoyed at the news: one, a sickle maker, relates how his fortunes have been turned around. Whilst war with Sparta was raging, his business suffered heavily; he could scarcely sell any of his wares. For the audience watching the play in 421, this would have struck a chord: the rural occupants of Attica had fled behind the city's long walls a decade earlier when Archidamus invaded Athenian territory (Thuc. 2.14), and since then they had been largely unable to return to the normal rhythms of agricultural life. With Trygaeus' peace established, however, the sickle seller's business is thriving: he can sell each sickle at fifty drachmas (*Pax* 1201). The other craftsman, a potter, is enjoying the peace as well, since he can sell his merchandise for three drachmas apiece (*Pax* 1202). But not everyone is delighted with the fruits of Trygaeus' diplomacy. An arms dealer, a spear maker and a helmet maker approach him in a state of exasperation. As craftsmen and retailers whose businesses thrive in times of war, they are now out of pocket and cannot offload their goods for a pittance – even a thousand-drachma breastplate is completely unmarketable, except perhaps as a commode (*Pax* 1224–39). After enduring a few further crude jokes about the uselessness of their products in a time of peace, the arms dealers slink away without having sold any of their manufactures (*Pax* 1240–64).

Notwithstanding the effects of comic exaggeration on the prices in this passage,¹ this is a revealing text for the economic historian, for it shows a basic

appreciation among the Athenians of the so-called market principle: that goods for sale will fluctuate in price depending upon the levels of demand and supply (and warfare is a prime example of the kind of circumstance that can alter these variables drastically).² Other Athenian texts further illustrate the fact that prices of commodities fluctuated according to variations in demand and supply, affecting a whole range of items, if not all those available in the marketplace. One commodity for which we have a number of attestations for price fluctuations is grain.³ Millett believes that 'grain was probably exceptional in the extent to which customary and actual prices tended to diverge,'⁴ but this assertion is not borne out by our evidence, which shows price fluctuation across a variety of commodities due to supply and demand. In a fragment of Diphilus (fr. 31 K-A) the speaker attributes a rise in wine prices to a spike in demand (cf. Dem. 42.20, 42.31). In Aristophanes' *Knights*, the sausage seller states that sardines are now cheaper than ever before during the war (Ar. *Eq.* 644–5; 647–50) and later in the play reminds his master how cheap silphium has been recently (Ar. *Eq.* 894–5). In the *Peace*, Trygaeus tells War that Attic honey is currently expensive and recommends another kind (Ar. *Pax* 253–4). In Theophrastus' *Characters* (4.12) a rustic coming to town asks about the prices of hides and salt-fish. Plutarch (*Demetr.* 33.5–6) narrates how Demetrius' murder of a maritime trader bringing goods to Athens so terrified other merchants that they stayed clear of the Piraeus. As a result, the price of salt rose to 40 drachmas per medimnus, and wheat to 300 drachmas per medimnus.⁵ War did not just cut off supply, driving prices up, but might also have the opposite effect: when Agesilaus flooded the markets of Asia Minor with booty, it drove down the prices of similar commodities (Xen. *Ages.* 1.18). This principle was not limited to the Aegean world, but was widespread in the Mediterranean: Polybius (34.8.4–10 = Strabo 3.2.7 and Ath. 8.1.330c–331b) notes how the rich natural resources of Lusitania resulted in relatively low prices for items such as barley (one drachma per medimnus), wheat, wine (one drachma per *metretes*), lambs, pigs, figs, calves and oxen.

Not only were the prices of commodities sensitive to changes in demand and supply, but Greek writers noticed this and could explain price changes in these terms. One of the keenest observers of what we would nowadays term economic phenomena was Xenophon. In writing on the silver mines, he notes:

Mining is not like working with bronze or iron, for instance, where if there is a large number of smiths their products become cheap and the smiths are forced out of business. Likewise, when grain or wine is plentiful, the price of the crop falls, working the land becomes unprofitable and in the end large numbers of farmers abandon their work and become traders or retailers or money-lenders instead. [Xen. *Vect.* 4.6, tr. Waterfield]

This passage forms part of a longer tract on plans to revitalize Athenian public finances through the development of the silver mines in southern Attica. Later, Xenophon suggests that the state buy 10,000 slaves to work the mines. But these are not to be bought all at once, for the spike in demand that would accompany such a move, as Xenophon notes, would raise prices and the degree of choice that the state had in relation to its purchases would suffer:

If a whole lot of us go ahead and build houses at the same time, we will end up paying more for lower-quality products than we would on a gradual approach, and if we go in search of huge numbers of slaves we will be forced to buy inferior men at inflated prices. [Xen. *Vect.* 4.36, tr. Waterfield]

These passages show that Xenophon lived in a world where markets were commonplace and the knowledge that commodity prices would fluctuate given changes in demand and supply was familiar. Yet observations of the sort Xenophon makes in these passages are hard to reconcile with the picture of the Athenian economy and ancient economic thought that has proven popular in the last few decades.

MARKETS — OR THE LACK OF THEM — IN RECENT SCHOLARSHIP

Despite the abundant evidence for market exchange in Athens and other Greek cities, there has been relatively little discussion of the role played by markets in the economy of the Ancient Greek world in the past forty years. In his *The Ancient Economy* published in 1973, a book that has influenced much recent work, M.I. Finley downplayed the importance of market exchange in the ancient Mediterranean.⁶ Finley began with a statement of Erich Roll: ‘If, then, we regard the economic system as an enormous conglomeration of interdependent markets, the central problem of economic enquiry becomes the explanation of the exchanging process, or, more particularly, the explanation of the formation of price.’⁷ He then posed the question, ‘what if a society was not organized for the satisfaction of its material wants by an enormous conglomeration of interdependent markets?’ If this were not possible, ‘economic analysis’ would be ‘impossible.’⁸ Finley then claimed that ‘wage rates and interest rates in the Greek and Roman worlds were both fairly stable locally over long periods (allowing for sudden fluctuations in moments of intense political conflict or military conquest), so that to speak of a “labour market” or a “money market” is immediately to falsify the situation.’⁹ Even if this statement is valid for labour (which, as we will see, it is not) and credit, it does not take into account commodities, for which, as we have seen, there is much evidence that prices varied in response to changes in supply and demand. And the reason why wages and interest rates may not have varied may have

been that supply and demand in these areas remained fairly constant over long periods, not because there were no markets for labour and credit.¹⁰ Finley found support for his argument about ‘the inapplicability to the ancient world of a market-centered analysis’ in the work of Max Weber, Johannes Hasebroek and Karl Polanyi.¹¹ Finley did not provide evidence to prove his point but asserted that it had been established by Weber, Hasebroek and Polanyi, and thus required no further proof. In fact, his statement misrepresents the views of Weber and Polanyi: Weber did speak of capitalism in the ancient world, and Polanyi found traces of market-based activity in fourth-century Athens.¹²

Finley went on to criticize French for writing about ‘investment of government capital in rural development’ in Athens under the Peisistratids in the sixth century BCE and to scold Sir John Hicks for discovering the first phase of the Mercantile Economy in the city state. He then declared that ‘if such assumptions prove invalid for antiquity, then all that follows must be false, about economic behaviour and the guiding values alike.’¹³ Finley may have been correct to find these specific analyses by French and Hicks anachronistic or unconvincing, but a few unconvincing examples of analyses based on market principles do not justify banishing all discussion of markets.

Finley’s main argument against analyzing economic activity in the ancient world in terms of markets is found on the last page of the first chapter of *The Ancient Economy*.¹⁴ He continues his criticism of Rostovtzeff’s use of the term ‘world-market’. To refute Rostovtzeff’s view that the ancient Mediterranean formed a single economic unit, Finley quotes the economic geographer B.J.L. Berry: ‘neither local nor long-distance trade disturbed the subsistence base of the house-holding units in peasant societies. The role of central-place hierarchies is, on the other hand, predicated upon extreme division of labour and the absence of household self-sufficiency in necessities.’¹⁵ Finley then adds the assertion (though not a single source is cited): ‘neither predicate existed to a sufficient degree in antiquity.’

There are several fallacies in Finley’s argument. First, one should note that Berry never states that ancient Greece was a peasant society and that Finley appears to assume that ancient Greece belongs in this category without providing reasons for his decision.¹⁶ Second, Finley operates with a rather stark dichotomy: either one speaks of peasant societies without markets or a ‘world-system,’ a ‘conglomeration of interdependent markets.’ This simplistic dichotomy omits the full range of possibilities that lie between these two extremes. Third, as Harris has recently observed, there may not have been much vertical specialization of labour in the economy, but there was a considerable amount of horizontal specialization, and this created one of the key conditions necessary for the creation of a market.¹⁷ This is not an original observation: Plato noticed the connection between the specialization of labour and market exchange in the second book of the *Republic* (371b–e). But the key

point is that Finley excluded the full range of types of markets that lie between the extremes of the world market and household self-sufficiency in necessities.

Finley's views set the agenda for several decades.¹⁸ A decade after the publication of Finley's *The Ancient Economy*, K. Hopkins called Finley's approach 'The New Orthodoxy' and provided a useful summary of its main tenets:

The new orthodoxy stresses the cellular self-sufficiency of the ancient economy; each farm, each district, each region grew and made nearly all that it needed. The main basis of wealth was agriculture. The vast majority of population in most areas of the ancient world was primarily occupied with growing food. To be sure, there were exceptions (such as classical Athens and the city of Rome), but they were exceptions and should be treated as such. Most small towns were the residence of local large land-owners, centres of government and of religious cult; they also provided market-places for the exchange of local produce and a convenient location for local craftsmen making goods predominantly for local consumption. The scale of inter-regional trade was very small. Overland transport was too expensive, except for the cartage of luxury goods. And even by sea, trade constituted a very small proportion of gross product. That was partly because each region in the Mediterranean basin had a roughly similar climate and so grew similar crops.

The low level of long-distance trade was also due to the fact that neither economies of scale nor investment in productive techniques ever reduced unit production costs sufficiently to compensate for high transport costs. Therefore, no region or town could specialize in the manufacture of cheaper goods; it could export only prestige goods, even overseas. And finally, the market for prestige goods was necessarily limited by the poverty of most city-dwellers and peasants.¹⁹

Hopkins proposed some small modifications to this orthodoxy. Without questioning the basic tenets of Finley's analysis, he listed seven factors that led to increased levels of production: first, total agricultural production rose; second, the population of the Roman world in the first and second centuries CE increased; third, the proportion of the total population engaged in non-agricultural production and services increased (attested by specialization of labour in Pompeii, Corycus and Rome – Hopkins does not mention Athens in the Classical period or any other Greek *polis*); fourth, as a result of increased division of labour, non-agricultural production rose; fifth, average productivity rose; sixth, the total amount and proportion of total production extracted in rent and taxes increased; and, seventh, the expenditure of taxes in the Roman provinces stimulated local production.²⁰ At the very end of this list Hopkins concedes: '[T]here is no intention here to underrate ... the extent to which trade which was stimulated by other factors, such as reciprocal needs and *market forces*.'²¹ This is as much attention as Hopkins is willing to concede to the role of expanding markets in stimulating an increase in the division of

labour and enhancing productivity. In his summary of the essays by Snodgrass, Garlan, Millett and Mossé in *Trade in the Ancient Economy*, however, Hopkins calls them ‘firmly primitivist in emphasis.’²² The possibility that productivity rose in Classical and Hellenistic Greece through the expansion of markets is never even considered.

In a response to Hopkins’ essay published almost twenty years later, Millett was willing to concede that there was economic growth in the Roman Empire during the first and second centuries CE: ‘the relative stability and tranquillity of this period ... and the arguably unified economy of the empire, possibly provided conditions which were conducive to modest but more or less sustained growth.’²³ On the other hand, ‘scope for sustained growth in the centuries BC was elusive or non-existent.’²⁴ Millett excludes a priori the possibility that expanding markets could have led to an increase in the specialization of labour and increases in productivity. Millett never mentions markets for commodities or labour, but claims there were no capital markets: ‘studies of modern economic growth stress the importance of capital markets (in England, from the sixteenth century) in converting savings into investment. Such markets were almost entirely absent from the ancient world where the high incidence of hoarding may help explain relatively low levels of inflation.’²⁵ (Millett provides no evidence for the ‘high incidence of hoarding’ as opposed to lending and investment.) The exogenous shocks of famine, plague and war took a heavy toll in the smaller economy of the Greek world.²⁶ The main way to increase one’s wealth was to take it from outside the community or by exploiting slave labour.²⁷

In the 1990s the view that self-sufficiency was key to an understanding of the economy of Ancient Greece remained prevalent. For instance, G. Reger in a book on the economy of Delos asserts:

[T]he goal of the peasant household was self-sufficiency: the ability to supply as many wants as possible from the activity of the members of the household itself. Landholdings suitable for grain and a garden plot, a few olive trees, and some goats could satisfy most food needs. For ceramics and the few metal tools a farmer needed, a handful of local village specialists sufficed. This microcosm, which numerically was undoubtedly the predominant unit of economic activity in the ancient world, had few points of contact with a larger trading economy.

Even though these peasants participated in festivals and occasionally bought items to celebrate weddings and funerals, ‘an evaluation of the role of peasant self-sufficiency is crucial.’²⁸

In a book published in 1991 Gallant took a similar approach: farmers in Attica were peasants who had little or no involvement in the market.²⁹ Likewise, in his account of recent work on the economy of Ancient Greece, Cartledge

avoids any discussion of markets. According to Cartledge, 'to the extent that manufacture of goods for exchange on the domestic or external market always played second fiddle to primary domestic production for autarkic home consumption, the ideal-typical Greek city was always a consumer not a producer city.'³⁰ As a result, Cartledge believes the 'Athenian community pursued always and only an import interest rather than an export interest.'³¹ In the opinion of Cartledge, as 'a vehicle for the distribution of goods, trade may have to take its place in the queue behind plunder and gift' and 'force, military force, remained the ideal economic specific, in the fourth as it had been in the fifth.'³²

In a major study of the ancient Mediterranean published in 2000 Horden and Purcell questioned Finley's view that most communities aimed at self-sufficiency, which may have remained an ideal but was rarely achieved: '[T]he prevalence of autarky has been deduced from its persistence as an ideal: practice has been inferred from rhetoric.'³³ Yet according to Horden and Purcell, the Athenian system in which 'the market replaces the usual function of storage' was relatively unusual.³⁴ As a result, Horden and Purcell claim that the economy was embedded, prefer to use the term 'redistribution' and avoid the term 'market exchange.'³⁵ It should therefore come as no surprise that the term *agora*, a place that Herodotus and Pausanias consider a standard feature of the Greek *polis*, cannot be found in the index to *The Corrupting Sea*. In the section on 'Places of Redistribution' there is much discussion of ports and *emporía*, but market-places are not mentioned once.³⁶ When discussing metals, Horden and Purcell believe that 'redistribution of metals was carried out in a vast variety of ways in Antiquity, under state or elite supervision.'³⁷ The role of private entrepreneurs mining at Laurion (Dem. 37; 42.3) and that of private merchants transporting silver (Xen. *Vect.* 3.2) are overlooked in their account.³⁸

In recent years, some scholars have questioned Finley's view that the economy of ancient Greece was stagnant and have pointed to signs of economic growth. For instance, I. Morris has drawn attention to the increase in the size of dwellings from the Archaic to the Classical period and rightly views this as a sign of economic growth.³⁹ Yet although Morris has found signs of economic growth, he does not provide any model to account for this phenomenon. In the introduction to *The Ancient Economy: Evidence and Models*, the editors Manning and Morris repeatedly call for models to explain economic growth in the ancient world, but the possibility that expanding markets may have led to a better allocation of resources, stimulated production and fostered an increase in the specialization of labour is not entertained.⁴⁰ Likewise, in an essay optimistically entitled 'Wealthy Hellas,' J. Ober reviews the evidence for economic growth in the Classical period, but attributes this increase in wealth to political factors. Even though there was an *agora* in the center of most Greek *poleis*, Ober does find a place for markets in his discussion of economic growth.⁴¹ Ober rightly stresses the importance of studying institutions

and their influence on economic growth, but he neglects the institutions that Douglass North and other scholars in New Institutional Economics have identified as the key motors in the expansion of markets: the rise of the state, strong property rights, and third-party enforcement of contracts.

In their introduction to *The Cambridge Economic History of the Greco-Roman World* Scheidel, Morris and Saller note that from 800 BCE to a thousand years later the economy grew.⁴² They identify the causes of this growth as changes in climate, a benign disease pool, improvements in agriculture and 'risk-buffering strategies such as fragmenting landholdings, diversifying crops, and trading surpluses.'⁴³ But little of this growth can be attributed to the expansion of markets because 'states remained major economic actors, markets were fragmented and shallow, with high transactions costs, investment opportunities were limited; money and markets generated intense ideological conflicts; and the economy remained minuscule by modern standards.'⁴⁴ Despite these constraints, the authors admit that 'goods moved around the Mediterranean more efficiently than ever before.' But how could goods move around the Mediterranean without effective markets? The chapters on the economy of Classical Greece in this volume contain very little discussion of markets, and in one chapter von Reden claims that there was not enough demand in Classical Athens to necessitate the creation of permanent markets (see discussion later in the chapter).⁴⁵ Despite some nods to New Institutional Economics, the editors and contributors in this volume make very little use of the insights of this approach with its stress on the importance of the expansion of markets fostered by robust institutional arrangements.

In the past fifteen years, however, some ancient historians have shown a willingness to pay more attention to the role of markets in the economy of the ancient Greek *polis*. In an essay published in 1998 J.K. Davies provided three diagrams of the flows of goods, services and money in the Greek *polis*. At the center of each diagram is the *agora* into which and out of which flowed goods and services from farms and households and which connected the *polis* with markets abroad. The *agora* was also connected to the *polis*, which provided regulation and protection and received taxes and fees in return.⁴⁶ In 2000 A. Bresson gave a collection of essays the provocative title *La cité marchande*, stressing the key role of market exchange in the life of the Greek *polis*. His two-volume synthesis, *L'économie de la Grèce des cités*, contains a long discussion of local and international markets and develops an approach building on the insights of New Institutional Economics.⁴⁷ In the introduction to a recent volume of essays about the economy of the Hellenistic world the editors Z. H. Archibald and J. K. Davies place market exchange alongside subsistence and redistribution as the major kinds of resource allocation in the Eastern Mediterranean during the third, second and first centuries BCE.⁴⁸ But one of the most vigorous calls for more attention to be paid to the role of markets has

come not from an ancient historian but from the anthropologist Jack Goody. In a perceptive critique of the work of Polanyi, Finley and those influenced by them, Goody rightly observes that ‘not to recognize the presence of market activities in the ancient world is to blindfold oneself.’⁴⁹

In this volume, we forefront markets as a key element in understanding how the economy of ancient Greece functioned and in explaining economic growth. But ‘market’ is a term with multiple meanings and nuances. Before we proceed to set out the contents of this volume, it is necessary to unpack these meanings and to see how and when they apply to the ancient Greek world.

TYPES OF MARKET IN THE GREEK WORLD

The general reluctance to discuss the role of markets in the economy of Ancient Greece is rather astonishing when one considers that the *agora* was a standard feature of the Greek *polis*. According to Herodotus (1.153.1–2), the Persian king Cyrus scorned the Greeks because they place an open space in the middle of their cities where men deceived each other on oath. The historian explains that the king was referring to marketplaces (*agorai*) for buying and selling, which indicates that they were a characteristic part of every city-state.⁵⁰ When writing about the city of Panopeus in Phocis, Pausanias (10.4.1) hints that it can barely qualify for the title of *polis* because it lacks an *agora* as well as other public buildings. The Athenian Standards Decree from the late fifth century BCE about weights, measures and coinage instructs officials to set up a copy in the *agora* of every allied city (IG i³ 1453E, line 4; 1453G, line 2); this command would have been pointless if every city in the Athenian Empire did not have an *agora*. From a passage in Plutarch’s life of *Aratus* (8.3) we can see that it was a normal occurrence for farmers to come from the countryside to the market at Sicyon. Even Sparta in the Classical period, a city not known for its trade and crafts, had a permanent market where more than 4,000 people met to exchange goods on a single day in 397 BCE. This market was so large that it had a special section devoted to items made of iron, including knives, swords, spits, axes, hatchets and sickles (Xen. *Hell.* 3.3.5–7).⁵¹

Even though one must distinguish between the term ‘market’ in the physical sense and the term ‘market’ in the abstract sense, the two are closely related: the construction of markets in the physical sense facilitates and encourages the development of market exchange. In the physical sense, a market is a place where people regularly come to buy and sell. In the Greek *polis* the community marked this space out by boundary markers or the construction of buildings such as stoas to provide shops for merchants. Market in the abstract sense is a sphere in which prices are created by the forces of supply and demand.⁵² Market exchange is distinguished from other forms of exchange such as taxes, redistribution, gift-giving or payment of ransom. According to K. Polanyi, the

market in this sense 'is motivationally distinct, for it receives its impulse from the urge of monetary gain. It is institutionally separated from the political and governmental center.'⁵³

When discussing the role of markets, one must avoid the question: Was the economy of ancient Greece a market economy or a non-market economy?⁵⁴ There are several reasons not to frame the issue in these terms. First, this question implicitly assumes that in any society one can identify a 'basic' or 'dominant' form of exchange to the exclusion of other forms of exchange. A more extreme version of this approach claims that the 'basic' or 'dominant' mode of production determines the shape of social relations in a given place. For instance, Polanyi thought that one could divide all societies according to their integration by three different forms of exchange: reciprocity, redistribution, and market exchange.⁵⁵ But most societies exhibit many different forms of exchange.⁵⁶ In modern societies, several forms of exchange co-exist: friends and family give each other gifts on holidays and at birthdays, states collect various forms of taxes and provide a range of services to citizens and residents, and different types of price-setting markets exist for different goods and services. True, markets are larger and more extensive in the modern world, but market exchange still remains one form of exchange alongside other forms of exchange. In several countries in Western Europe (e.g., France) the government absorbs more than half of gross domestic product in taxes and redistributes a large amount of the public budget to its citizens by providing subsidies and services such as health and education.

Instead of framing the question as a stark dichotomy (market economy or non-market economy), one needs to ask what kind of price-setting markets existed.⁵⁷ Posing the question in this way provides a more flexible approach to the evidence, one that allows us to take account of diversity in economic behavior and to identify different patterns of exchange. Markets can vary in three basic ways: in terms of time, in terms of space and in terms of items exchanged.⁵⁸

Time

First, there can be occasional markets, periodic markets and permanent markets. The earliest literary evidence for an occasional market comes from the *Odyssey*, which reflects the social realities of the late eighth or early seventh century BCE.⁵⁹ In his story about his kidnapping, Eumaeus the swineherd tells how Phoenicians came to his country with merchandise and traded until their ships were full of cargo bought by exchanging their goods (*Od.* 15.415–416, 455–456). There is no indication that the Phoenicians came on a regular basis, and their trade did not form part of any social relationship such as the guest-host relationship (*xenia*). They came to Eumaeus' country and stayed

as long as they needed to dispose of their goods and acquire other goods to take to another place. In this period, the *agora* was simply a meeting place in the middle of a settlement. It had not yet acquired an exclusively commercial function.⁶⁰ We also find occasional markets during the Classical period. Thucydides (1.62.1; 6.44.2, 3; 8.95.4) and Xenophon (*An.* 4.8.8 [Macronians] and 23 [Trapezuntians]) report how a city might provide a market for an army passing through its territory.⁶¹ In this case, the demand for goods arose at a single time and did not continue after the army departed.

At the next level are periodic markets, which take place at regular intervals, say every ten days or twice a month. In many peasant societies most markets are periodic rather than permanent and continuous. In these societies, as Berry notes,

The market is not open every day, but only once every few days on a regularly scheduled basis, because the per capita demand for goods sold in the market is small, the market is limited by primitive transport technology, and the aggregate demand is therefore insufficient to support permanent shops. Businessmen adjust by visiting several markets on a regular basis; and by accumulating the trade of several markets they are able to survive.⁶²

One finds an example of this kind of market at Baetocaece in Syria. An inscription from this city containing a letter from the Emperor Valentinian contains instructions from a communication by King Antiochus I (early third century BCE) or King Antiochus II (mid-third century BCE) calling for *panegyreis* to meet twice a month at Baetocaece, on the fifteenth and the thirtieth (*IGLS* VII 4028, lines 15–39). During the Imperial period, the periodic markets of Asia Minor coordinated their schedules so that merchants could travel from one to another.⁶³ We find the same arrangement in Campania during the early Roman Empire.⁶⁴ Periodic markets were often linked to festivals (*panegyreis*) and existed alongside permanent markets. These might meet once a year such as the Thermika at Thermos (Polyb. 5.8.5) or twice a year as at Tithorea (Paus. 10.32.15–16). On the one hand, markets were held to provide food and other items for those coming to attend a religious festival. On the other, merchants might take advantage of the large number of customers gathering at festivals to sell items like cattle and slaves.⁶⁵ Despite their religious aspect, Strabo (10.5.4) calls *panegyreis* gatherings that are ‘in a way commercial activities.’ These markets also might create a temporary rise in the demand for coinage, and the communities hosting them would respond by minting special *panegyris* issues to facilitate commercial exchange.⁶⁶

As the economy grows and the specialization of labour increases, permanent markets are established. As Berry notes, several factors bring about the rise of permanent markets: ‘the establishment of law and order, introduction

of cash as an exchange medium, expansion of transport facilities, and growth of non-agricultural markets for foodstuffs.⁶⁷ New Institutional Economics also stress the role of law and order in creating the conditions necessary for the expansion of markets.⁶⁸ Other factors include increasing demand as the result of rising incomes and more extensive manufacturing production. The *agora* in Athens was certainly a permanent market where buyers and sellers congregated most days of the year.⁶⁹ As we saw earlier in this chapter, the market at Sparta also appears to have met frequently. The market in Corinth appears to have met regularly and was even more full than usual during the festival of Artemis Euclea (Xen. *Hell.* 4.4.2).

The central *agora* in Athens was so large that it was divided into different sections. Xenophon (*Oec.* 8.22) claims that slaves sent to the market for shopping had no trouble finding different wares, because they were all kept in their appointed places. Eupolis (fr. 327 K-A) mentions the place where books are for sale,⁷⁰ and has one of his characters recall how ‘I went around to the garlic and the onions and the incense and straight to the perfume, and around to the trinkets.’ Pherecrates (fr. 2 K-A) mentions the wreath stalls, the perfume market and the stalls for bergamot, mint and larkspur. The same poet characterizes perfume stalls as an area where young men were apt to loiter and chat (fr. 70 K-A; cf. Polyzelus fr. 12 K-A; Theophr. *Char.* 11.8). Theophrastus (*Char.* 11.4) writes of parts of the *agora* where walnuts, myrtleberries and fruits are for sale. Alexis in his *Kalasiris* mentions a quarter known as the ‘circles’ (*kykloi*) where utensils were sold (Poll. *Onom.* 10.18–19). Periodically – probably once every lunar month – this area was set aside for a slave auction (Lewis, [Chapter 14](#) in this volume). A separate part of the market was called the ‘women’s *agora*’ where one could find items just for women (Poll. *Onom.* 10.19). Wine was available near the city gate in the Ceramicus (Is. 7.20; cf. Ar. fr. 310 K-A). Another area was noted for its fresh cheese (Lys. 23.6), others for vegetables and pots (Ar. *Lys.* 557), flour (Ar. *Eccl.* 686) and meat (Teles fr. 2 K-A). If one wanted to hire a porter or a worker, one went to the hire market (Pherecrates fr. 142 K-A). It is vital to grasp that what enabled the Athenian *agora* to meet every day, what enabled it to grow to such a size that it developed subsections and what made the construction of permanent market buildings an attractive choice to the polis was high levels of demand. We will return to this theme later in the chapter.

Space

Markets may also vary in spatial terms. At the lowest level there are local markets where buyers and sellers from a relatively small area gather to exchange goods and services. Although we have plentiful evidence for large permanent markets in cities such as Athens, Corinth, Miletus and Delos, there is less

evidence for smaller local markets. For Attica, however, there is epigraphic evidence for *agorai* in several demes: Besa (*Agora* XIX P9, line 31), Deceleia (*IG* ii² 1237, lines 64–68, 78–84), Eleusis (*SEG* 28.103 [333/2 BCE]; *IG* ii² 1103, lines 2–4), Erchia (*SEG* 21:541E, lines 50–51), Sounion (*IG* ii² 1180 (c. 350 BCE), lines 4–17), north of Sounion at Pasalimani (Salliora–Oikonomakou [1979]. Cf. *IG* ii² 1080) and at Halai Aixonides.⁷¹ For those living in the city of Athens there was the main *agora* near the Acropolis, but there were also several deme markets: Kollytus (*IG* i³ 426, line 8), Kydathenaion (*Agora* XIX L6a, line 5), Skambonidai (*IG* i³ 244 [c. 460 BCE] C.I, line 7) and Melite (*Agora* XIX P26, line 454). There was also a marketplace at the Piraeus (*IG* ii² 380; 1176 [c. 380 BCE], line 20). In a recent study, Kakavogianni and Anetakis have presented the archaeological evidence for markets in Myrrhinous, Steiria and Thorikos, as well as archaeological evidence to back up the epigraphical attestations for markets at Sounion (and perhaps one between Erchia and Oe) and Thorikos.⁷² There would thus have been an *agora* within three or four hours' walk for almost all farmers in Attica.⁷³ It is highly unlikely that scholars have accounted for every marketplace of this sort, and future research is likely to uncover similar markets in other parts of Attica.⁷⁴

At the next level are regional markets that linked buyers and sellers from different city-states. There has been some debate about how to identify a 'region,' but there are three main criteria: geography, ethnicity and polity.⁷⁵ Shared physical features can unite areas into a region. For instance, the Aegean basin shares certain climatic and geological features. One can also identify areas that include several city-states by the shared ethnic identity of the inhabitants, such as Achaea, Aetolia, Ionia, Macedonia and possibly regions like Arcadia and Messenia. Sometimes these regions united by common ethnicity coalesced into political units such as federal leagues (the Achaean league, the Aetolian league), but sometimes they did not (Ionia, the Dodecannese). Reger has identified the Cyclades as a regional economy, one that bound together local trade in many commodities.⁷⁶ These regional units were often linked by commercial exchange. In Aristophanes' *Acharnians* (874–6, 878–80) a trader comes to Athens from Thebes to sell 'marjoram, pennyroyal, rush-mats, lampwicks, ducks, jackdaws, francolins, coots, wrens and dabchicks' and 'geese, hares, foxes, moles, hedge-hogs, cates, badgers, martens, otters, and Copaic eels.' Another trader comes from Megara to buy salt and garlic (889–90). In a fragment of Strattis' *Cinesias* we hear of a character buying grain from Boeotians (fr. 14 K–A). In her [chapter](#) on weight standards Psoma shows how neighbouring cities might adjust their weight standards to facilitate exchange and promote the growth of regional markets. For instance, Alexander I of Macedon used a reduced Milesian standard for his tetradrachms and smaller fractions to promote trade with the cities of the Chalcidic peninsula, who used the same standard. In the fifth century the city of Byzantium in Thrace and the city of Chalcedon in

Bithynia on the opposite shore issued coins on the same standard and with similar types to make trade easier between their markets.

Beyond regional markets, there were interregional markets in some commodities. In a world without refrigeration not all commodities were suitable for long-distance transport. On the other hand, one should not underestimate the volume of interregional trade. The Athenian comic poet Hermippus (fr. 63 K-A) provides a long list of items found in the Athenian *agora*:

From Cyrene stalks of silphium, and oxbides, from the Hellespont mackerel and all sorts of dried fish, from Thessaly pudding, and ribs of beef ... the Syracusans bring pigs and cheese ... From Egypt masts with sails and papyrus. From Syria frankincense, beautiful Crete supplies cypress for the gods, Libya much ivory for sale, Rhodes raisins and dried figs for sweet dreams. Slaves come from Phrygia, mercenaries from Arcadia, Pagasae sends slaves and tattooed men. The Paphlagonians send Zeus' acorns and shining almonds (these are what adorn a feast). Phoenicia for its part sends fruits of palm and semodalin, Carthage carpets and richly colored pillows.

The archaeological record and other sources show that this is not just poetic invention. Several essays in this volume deal with the specifics of medium and long-distance trade, drawing upon the rich data provided by archaeologists to enhance our understanding of the trade in different commodities. Kron shows how the Greeks carried on an intensive trade in many types of commodities, which helped to raise the living standards of not only the elite but also many average families.

Chavdar Tzochew's [contribution](#) to this volume focuses upon the trade in Thasian wine as a case study. He examines the evidence for export of Thasian wine to the Black Sea, with striking results: this was not an irregular occurrence where Thasians occasionally exported wine surpluses as a result of unusually high grape harvests. The stamps on Thasian amphoras allow us to view exports diachronically, and this evidence shows the regular annual export of large quantities of Thasian wine to the Black Sea littoral. The evidence of amphoras can be used in other ways, too: Tania Panagou's [contribution](#), which surveys the distribution of amphora stamps across the Greek world, shows how a city like Corcyra might transport commodities in amphoras to ports as distant as Sicily and Athens. Her collation of the data enables us to see – albeit in a broad sense – the export tendencies of many Greek *poleis*. Mark Lawall's contribution, on the other hand, discusses the amphora as an aspect of 'imperfect markets' – the ways in which the realities of Greek markets do not meet the pristine expectations of neoclassical economics. His discussion takes us down to the level of haggling between buyer and seller in the *agora*, discussing some of the realities of market exchange in the ancient marketplace. Psoma's essay shows how Macedonian monarchs and Greek city-states might mint different

kinds of coins for local markets and long-distance markets. Bronze coins and silver coins in smaller denominations were suitable for local exchange while larger denominations of silver coins and gold coins were more appropriate for long-distance trade. This essay illustrates the key role of the state in promoting the growth of markets, another key theme in New Institutional Economics.

Cristina Carusi's [contribution](#) combines a careful study of textual evidence with the findings of archaeology in order to chart the trade in salt. Although most regions had access to local supplies of salt, some did not, and were forced to import this vital commodity. But one of the most useful qualities of salt is its ability to preserve foodstuffs. Fish might spoil quickly, but when preserved in salt, their longevity – and value as a commodity in long-distance trade – was greatly enhanced. This method of preservation enabled markets like that of Athens to be linked into trade networks moving preserved fish (*tarichos*) from the Black Sea and Hellespont in the north to Cadiz in the West.

Some commodities, however, have not left an archaeological footprint, and we must turn to textual sources in order to chart their production and movement. In his [contribution](#) to this volume Peter van Alfen mines both Greek and Semitic sources to produce a list of commodities traded from the Persian Empire to the Aegean, showing both the range of goods in long-distance trade as well as documenting their consumers, who were not – as the traditional view holds – merely members of a wealthy elite with a taste for ostentation. Goods from the east were consumed by Athenians at all levels of society, albeit to differing degrees. David Lewis' [contribution](#) provides a case study in one important commodity exported from the east: slaves. His chapter shows that an organized system of supply reaching into Persian-controlled Anatolia, paired with low transport costs, enabled slave systems such as that of the Athenians to flourish, providing access to a plentiful supply of cheap labour, so much so that most Athenian citizens could afford to buy a slave. In this case, the expansion of markets helped to lower prices. J.K. Davies also takes the trade in a single commodity – incense – as a case study in [Chapter 13](#). He charts its movement from production in Arabia to overland trade to the Mediterranean coast, as well as its buyers in the Greek world. His chapter shows the complexity of trade networks as well as the degree of demand exerted by Greeks.

One important issue to address when considering interregional trade is its overall volume. In his [contribution](#) to this volume Geoffrey Kron places ancient Greek maritime trade in comparative perspective, and shows that it was far from a minor aspect of the economy. Levels of imports per capita place *poleis* such as Classical Athens in the same league as prosperous renaissance city-states such as Venice, and imports to Athens and other *poleis* went well beyond the essentials of grain, timber and metals as well as minor luxury goods for the elite. Taken together, these contributions bring a new level

of detail to our understanding of the regional and long-distance trade in commodities in the Greek economy, as well as a firmer appreciation of their scale and dynamism.

Markets in Commodities, Labour and Credit

One should also distinguish among markets in commodities, markets in labour and markets in credit. As we noted earlier, different commodities might be traded in different types of markets. Some items such as fresh vegetables or fresh meat had to be sold close to the place of production, but others could be sent to distant markets. It was possible to put cattle and horses in ships and send them to ports across the sea. For instance, the Athenians transported cavalry from Attica to Sicily during the campaign against Syracuse (Thuc. 6.43). But the costs of transportation might make it impossible for a merchant to make a profit from a long-distance trade in animals. As we have seen from discussion earlier in the chapter, however, it was easy to ship large amounts of grain or large quantities of wine in ships across the Aegean or the Black Sea.

But even though these products came from great distances, prices appear to have been set locally. A speech in the Demosthenic corpus ([Dem.] 56.3-4) describes how Cleomenes, Alexander's governor of Egypt, tried to manipulate the price for grain in the Greek cities. He sent people to several places to find the prevailing prices and sent ships to ports where the price was highest. During this time, the price of grain at Athens was high, but the arrival of shipments from Sicily caused the price to decline. As Reger observes,

Kleomenes' 'distribution scheme,' if I may call it that, seems to have required not a general price-setting market but a large number of relatively independent local markets. These price differences were not simply the result of differing transportation costs, since otherwise there would have been no higher profit in moving the grain. On the arrival of a grain shipment from Sicily, prices in Athens crashed – proof enough that prices in the Peiraieus were set in the Peiraieus, not at Rhodos.... These prices represented real differences between independent and semi-independent local markets, where prices were set locally and were relatively impervious to the impact of price changes elsewhere.⁷⁷

Yet even though the price of grain fluctuated only in terms of supply and demand in local markets, the price of gold was set in terms of supply and demand throughout the Aegean. As Le Rider has shown, the silver-to-gold ratio was 13 1/3:1 in the 380s. But with the increased production of gold by Philip II, the silver:gold ratio slipped to 12:1 and fell to 9 1/2:1 by 329/8 as a result of an influx of gold from Alexander's conquests.⁷⁸ The increase in the supply of gold led to a decrease in the price.

It is also possible to discern a market in labour in the ancient Greek world. Most hired labourers came from within the city-state, but one should not underestimate the mobility of labour.⁷⁹ The Greek state did not erect barriers to impede the mobility of labour. Workers moved back and forth from one area to another without passports, visas or work permits. An Athenian named Leocrates owned slaves working in a forge, moved to Megara in 337 where he was a merchant active in the grain trade, then returned to Attica after living in Megara for more than five years (Lycurg. *Leocr.* 21–7). The only thing a foreigner had to do when entering Attica in search of work was to register as a metic after a certain period, pay an annual tax and find a *prostates* to represent him in legal proceedings.⁸⁰ Similar arrangements existed in other Greek communities.⁸¹ The evidence of the Greek world illustrates the insights of New Institutional Economics: the creation of institutions protecting the rights of foreigners was decisive in promoting the expansion of the market for labour.

Many workers took advantage of this freedom of movement.⁸² The accounts for the construction of the Erechtheum from the later fifth and early fourth centuries record payments to 122 different workers: 22 are citizens, 18 slaves, 26 of unknown status and 56 metics.⁸³ Building accounts from Eleusis dated to 330 and 329/8 give similar proportions: out of eighty-five workers whose status can be determined, twenty-nine are citizens, forty-five are metics and eleven are foreigners.⁸⁴ Two come from Corinth, three from Megara, one from Samos, three from Boeotia and one from Cnidus.⁸⁵ There are also large numbers of foreigners found in building records from Epidaurus, Delos and Delphi. In many cases the status of these workers is unknown. At Delphi, however, there are seventeen citizens and seventy-nine foreigners (the status of seventy-seven is unknown).⁸⁶ These workers came from cities as close as Sicyon, Corinth, Argos, Aegina, Megara and Athens but also from as far away as Knidos, Olynthus, Larissa, Trikke, Croton in Southern Italy and Cyrene.⁸⁷ Many of those working on Delos came from the Cyclades but others from more distant cities such as Sinope, Byzantium, Assos, Mytilene, Chios, Clazomenae, Thebes, Corinth, Crete and Egypt.⁸⁸ The need for skilled workers for construction in major sanctuaries therefore created a demand that could only be satisfied by regional and interregional labour markets.⁸⁹

Doctors also circulated widely throughout the Aegean and beyond to satisfy the need for medical skills. Cos produced an oversupply of doctors, who travelled to Caria, Delphi, Cnossus, Gortyn and Aptera on Crete, Halicarnassus and Calymna.⁹⁰ Diogenes from Pergamum went as far as Acarnania. Some moved from place to place, such as Apollonius of Miletus who visited many islands and received public honours at Tenos, or Asclepiades of Perge who practiced his skills in many cities.⁹¹ Others, such as Menocritus of Samos, who practiced medicine in Carpathus for twenty years, might settle in a foreign city.⁹² High demand for medical skills and the limited supply of doctors permitted some doctors to

command high prices. According to Herodotus (3.131), Democedes of Croton came to Aegina to practice medicine and was offered one talent by the people there. The Athenians then lured him away with an offer of one hundred *mnai* but were outdone by Polycrates of Samos, who offered him two talents.

It is also possible to speak of a market for credit in the ancient Greek world. Douglas North and Robert Thomas have demonstrated the importance of strong property rights for economic growth in the modern United States,⁹³ and North has shown that inefficient property rights created a barrier to economic growth in early modern Spain.⁹⁴ Edward M. Harris takes these insights from New Institutional Economics and applies them to ancient Greece. It has been argued that most credit was obtained from friends, family and neighbours, but Harris' [contribution](#) to this volume shows that the market for credit in areas like Attica and the island of Tenos extended far beyond this limited circle. The existence of property records in Greek cities gave individuals verifiable title to their assets. This meant that lenders could be more confident that borrowers had title to the security they offered for loans and thus make 'credible commitments' in the language of New Institutional Economics, which in turn made credit more easily available. As a result, loans were made well beyond the closed circle of friends and neighbours that have traditionally dominated discussion of this issue.

Beyond the realm of private access to credit, there is also some evidence for lending between cities. Aeschines (3.104) relates how Demosthenes made a loan of one talent at an interest rate of 12 percent to the people of Oreus, who pledged their public revenues as security. Around 358/7 the Athenian politician Androtion was praised for making a loan without interest to the people of Arcesine (*IG* XII 7, 5, lines 4–8). But these were probably unusual arrangements. Even though Androtion was not out to make money, Demosthenes was clearly looking for a profit and attempted to reduce risk by insisting on security. On the other hand, the temple of Apollo on Delos made loans both to Delians and to foreigners and neighbouring cities, but the latter were all from the Cyclades. As Reger notes,

The best-preserved account of the fourth century, the so-called Sandwich Marble (*ID* 98 = 1635 = Tod II.125), gives the interest paid on loans by thirteen neighbouring states (including Karystos on Euboea) amounting to a borrowed capital of 260,600 dr, over 43 talents.... Paros borrowed money in the fourth century; all three cities on Amorgos were forced to borrow in the fourth and third centuries; Ios likewise borrowed funds for various public purchases; and on Keos, Ioulis borrowed money in the third century and another city, perhaps Karthaia, had to borrow pathetically small sums month to month. Likewise individuals who borrowed from Delian Apollo during the Amphiktyonia came from Tenos, Karystos on Euboea, Andros, and Galessos on Syros.⁹⁵

In the Ancient Greek world there was nothing like the large loans made by French banks to Imperial Russia for the construction of railroads at the end of the nineteenth century. Nevertheless, markets for credit did exist, albeit on a more modest level.

MARKETS, COMMODITIES AND HOUSEHOLD DEMAND

Let us sum up so far. Most cities had a permanent central *agora*; in large cities this might be subdivided into different sections, and smaller (and perhaps occasional) markets might be found in the countryside if its *chora* were extensive. Periodic markets and *panegyreis* supplemented permanent markets in most regions, and markets brought together both local produce as well as that of other regions. The forces of demand and supply shaped the prices of goods and services and set the basic parameters of interest rates.

That much is clear from the evidence discussed earlier in this chapter. But markets of this size and distribution can only exist and develop in a society that exerts high enough levels of demand for the sorts of goods retailed in marketplaces. On the traditional view of the economy (and one which still has many adherents), most households were self-sufficient, aiming to satisfy their own subsistence needs but little else. According to von Reden, the effect of expanding needs – that is, demand – on the operation of interdependent market-exchange was limited: ‘In no case can it be shown that it was regular, widespread, or sustained enough to be supplied effectively by the market without state interference.’⁹⁶ In other words, levels of demand were generally low, higher levels of demand being irregular at best, and market forces by themselves were insufficient to guarantee supply. But does this view really reflect the evidence we have for household requirements in the Greek world?

Attica provides us with the largest body of evidence for discussion. Few would dissent from the view that wealthy *oikoi* not only created demand for a wide variety of commodities but produced surpluses well in excess of domestic needs. Good evidence for the higher income-tier households can be found in the Attic Stelai (*IG I³ 421–430*), a series of fragmentary inscriptions recording the auctioned household contents belonging to a variety of individuals who were convicted following the mutilation of the herms and the parody of the Eleusinian Mysteries in 415 BCE.⁹⁷ These records show the large stockpiles of goods in wealthy households, particularly ceramic goods and textiles, but also furniture, slaves, tools, livestock, building materials, weapons and other miscellaneous items. These men were clearly avid consumers of goods bought from markets. And they produced for the market as well: one of the most notable resources in the Stelai is the farm of Adeimantus on Thasos (*IG I³ 426*, lines 44–51; cf. *Dem.* 42.20, 24) which specialized in wine production and, when confiscated, had some 6,000 litres of wine in store, clearly more than the most

bibulous Athenian required for his own needs, and which must have been a market-oriented enterprise (cf. Tzoché, [Chapter 10](#) in this volume).

Yet households of such wealth represent only the upper crust of Athenian society; the Attic Stelai cannot shed light on the households of average citizens. Can we really assume that in a city such as Athens the demand that enabled the existence of the large permanent *agora* in the city center was driven largely by the elite? As Ober has recently observed in relation to economic growth, ‘the “motor” of consumption powered by a tiny elite is relatively feeble. It is only with the emergence of a substantial and stable “middling” class of persons living well above the level of subsistence, and therefore willing and able to purchase goods unnecessary for their mere survival, that societal consumption becomes a strong driver of economic growth.’⁹⁸ *Mutatis mutandis*, the same observation can be applied to markets. It is simply impossible to reconcile the evidence for the size, permanence and diversity of Athens’ central *agora* with the notion that the demand for its products was for the most part limited to the liturgical elite. Demand must have been far more widespread. If we wish to understand the size and prevalence of markets in the ancient Greek world, we need to begin by looking at the economic arrangements of households.

Recent work supports the notion that many more Athenian households were involved in market exchange than was once thought. In a recent study, Kron has brought comparative cliometric methods to bear on the issue of economic inequality at Athens, placing it in proper historical perspective. He has shown that far greater extremes of economic inequality existed in societies such as nineteenth- and early twentieth-century Great Britain. We are unlikely to be describing the economic resources of the average Athenian household accurately if we assume a priori that a ‘poor’ Athenian was as hard-up as a Victorian coal miner or mill worker.⁹⁹ And in an analysis of wages and subsistence costs Scheidel has shown that average wages for a craftsman in Classical Athens were several times subsistence costs, meaning that even relatively modest Athenian households were not merely concerned with surviving hand-to-mouth.¹⁰⁰ We also must remember that in Athens, poor households were not subject to some of the tax burdens that modern states impose: there was no income or council tax, nor were commodity prices driven up by the many taxes (such as value added tax) that modern states impose.

What sort of products and commodities would an average Athenian household aim to acquire from the marketplace? In an appendix to this volume Lewis has collected the evidence for commodities available in Attica from Old Comedy. A number of caveats and provisos must be addressed in the use of this catalogue (discussed at greater length in the appendix), but a quick glance conveys the sheer variety of goods potentially available in the Athenian *agora*. With this list at hand we may begin to address the degree to which average households interacted with markets. That is not to say that the method outlined here

is the only one for investigating this issue, for work on domestic assemblages has much potential to shed light on the extent to which Greek households were truly self-sufficient.¹⁰¹ But the advantage of our catalogue is that it brings to the discussion a wide variety of commodities that do not generally survive for archaeologists to unearth.

As a thought experiment, we may picture an average farming household, that backbone of Athenian society at the less affluent end of the wealth spectrum, and ask how isolated such a household could have been from market exchange.¹⁰² What is striking is the long list of fairly essential goods that could not be produced domestically and must have been acquired at the market. Whilst much of the household's textile needs may have been produced domestically,¹⁰³ there is no question that footwear was acquired from professional shoemakers. And it will have needed replacement: Theophrastus (*Char.* 22.11) lampoons the stingy man who mends his own shoes rather than buying a new pair. Lamps and lamp-wicks for lighting will have been a necessity. Along with lamps went an impressive array of ceramic goods for cooking, eating and storage that, again, must normally have been purchased – and these will have had to be periodically replaced as well due to breakage: pots and pans, braziers, crockery, wine jugs, storage jars, strainers and chamber pots. From what we know of the price of pottery, most items lay within the purchasing power of a modest household.¹⁰⁴ Fuel – if not available from one's own land – must have been bought; we know of charcoal makers working in the Attic countryside who produced this highly important resource, required as a cooking fuel as well as for industrial processes and bathhouses.¹⁰⁵ All of the household's utensils, from cooking items such as knives, ladles and so on to tools, brooms and other implements, were available at the *agora* and were a must-have for even the poorest households. Various leather goods were also essential market purchases, especially items such as panniers for donkeys, knapsacks and wine-skins. Furniture was generally produced in slave-staffed workshops,¹⁰⁶ although poorer households may have contained only the bare essentials. Even the barest household with the stingiest owner was not hermetically sealed from the market, and this sketch is overly pessimistic.

Beyond the bare essentials, normal Athenians will have aimed to purchase far more. It may have been possible to dine exclusively off the produce of one's own farm, but some purchasing of supplementary items and small luxuries will have varied the fare greatly. Expensive fish may only rarely (if ever) have made the table of poorer Athenians, but salt fish (*tarichos*) was proverbially cheap (Ar. fr. 347 K-A; *Vesp.* 491)¹⁰⁷ and was imported from as far north as the Black Sea and as far west as Cadiz (Cratinus fr. 44 K-A; Hermippus fr. 63 K-A; Eupolis fr. 199 K-A). Other fish, such as sprats, were seen as a cheap and cheerful dish (Alexis fr. 200 K-A; cf. Alexis fr. 159 K-A);¹⁰⁸ and in exaggerated style, Eupolis (fr. 156 K-A) lampoons the cheapskate who only ever once

bought anchovies. Although the consumption of meat is normally associated with the sacrifice of large animals, we should not underestimate the varieties of birds and small game available in the *agora*, as well as products such as sausages and blood-puddings.¹⁰⁹ And not all baking was done for domestic consumption: Athens boasted a wide range of cakes and pastries,¹¹⁰ many of which were available in the marketplace. Herbs and seasonings brightened up the diet, and whilst some were grown at home, it is clear that many were imported from outside Attica. Salt was important for seasoning, and Theophrastus imagines that a fieldworker preparing some broth will have salt at hand to season the dish (*Char.* 14.11). Few households supplied their own salt: most would have had to buy it at the market (cf. Carusi, this volume).

One must bear in mind that many of the bleak views of Athenian peasant farmers struggling to survive operated on the assumption that the only marketplaces in Attica were in the city of Athens itself, the Piraeus and Sounion. As we have seen earlier, however, epigraphic and archaeological evidence attests that marketplaces were well within reach of even the most remote farmstead in Attica. Our view of Attic agriculture will need to be revised to accommodate these new findings.¹¹¹ One should add to this picture the evidence of travelling peddlers, who made a living visiting more out-of-the-way districts. We find one such peddler in Aristophanes' *Acharnians* (860–958), a travelling Boeotian trader with a variety of products in his baggage. In a fragment of Antiphanes (fr. 69 K–A) we hear of an itinerant fishmonger who visits the countryside selling sprats and red mullet.¹¹² But even when Theophrastus lampoons the country bumpkin (*agroikos*), he does not imply that this rustic never emerges from his farmstead:

When he is going into town, he asks anyone he meets about the price of hides and salt fish, and whether today is the first of the month,¹¹³ and he says right away that when he reaches town he wants to get a haircut, do some singing at the baths, hammer some nails into his shoes, and while he's going in that direction pick up some salt fish at Archias'. [Theophr. *Char.* 4.15, tr. Rusten]

He also fails to see the virtue of perfume, declaring it no sweeter than thyme (*Char.* 4.3; cf. Eupolis fr. 222 K–A). What is amusing for Theophrastus is that the bumpkin makes a fuss about purchasing goods and services, something that is utterly prosaic and unworthy of mention to a city dweller. Here, two things are clear: the through-and-through rustic does not engage in market transactions to the same degree as an urbanite – hardly a surprise; but that said, he *does* emerge from his farm to visit the city, and he *does* engage in market transactions when he goes there. The point we should take is that for Theophrastus, it was only the worst sort of yokel who could regard visiting the market, the baths or the barber as a novelty.¹¹⁴ Likewise, in Aristophanes' *Acharnians*, the

farmer Dicaeopolis does not live in a closed, autarkic farmstead. He clearly has the resources to engage in market exchange, and almost salivates at the opportunity to acquire a whole grocery list of imported treats (Ar. *Ach.* 874–90; cf. 760–1).¹¹⁵ Another of Aristophanes' farmers describes how he sold some of his grapes for cash and was aiming to use the money to buy flour (Ar. *Eccl.* 817–822), and in *Pax* 563 a farmer talks about returning to the fields after buying some *tarichos* to eat there. Evidently, Attic farmers were far from isolated from the world of markets.¹¹⁶

Let us move away from this rather crude distinction between 'poor' and 'elite' households. In Athens citizens of the hoplite census would have been able to own at least a few slaves, and will also have been the purchasers of arms and armour. Few could have boasted the beautiful armour and trappings of a Lamachus or an Alcibiades (Ar. *Ach.* 1095–141; Plut. *Alc.* 16; cf. Xen. *Mem.* 3.10.9), but at the very least a hoplite needed a spear and a shield.¹¹⁷ The demand for arms and armour kept a variety of craftsmen in business: spear makers, sword makers, bowyers, helmet makers, corselet makers and crest makers,¹¹⁸ and it facilitated the existence of Athens' largest workshops: we hear of one workshop producing shields that may have had more than a hundred slave craftsmen (Lys. 12.19), and the complement of slaves in Pasion's shield workshop has been estimated at sixty to seventy (Davies 1971: 433–4; Dem. 36.11). Other smaller enterprises produced high-quality, bespoke armour for the wealthy (Xen. *Mem.* 3.10.9–15).

What this evidence shows is that Athenian society cannot be accurately characterized in terms of a super-wealthy elite which utilised the market for luxury purchases, sitting atop an undifferentiated mass of subsistence farmers for whom the market was of marginal importance.¹¹⁹ That simply does not fit our evidence. Most households produced at least a modest surplus that could be used to acquire a variety of commodities; most of these commodities were not bought from friends or neighbours, but were bought from markets; and even country dwellers, though not as dependent on markets as inhabitants of the city, were hardly isolated from market transactions. Athenian markets were not just stocked with highly expensive luxuries, but also with a wide variety of affordable products (cf. Van Alfen, Chapter 12 in this volume) and, *pace* von Reden, demand was clearly high and regular enough to keep the *agora* stocked with a cornucopia of goods throughout the year.

Several essays in this volume treat the intersection between the domestic economy and markets. We have noted the role of production for the market in elite farming in Attica, something that epigraphic evidence allows us to analyze in detail. Evi Margaritis in Chapter 8 uses the evidence of palaeobotany to reconstruct the farming regime of two large elite farms in Hellenistic northern Greece. Her contribution combines this evidence with that of the excavated farmhouses, including their storage facilities, to construct a picture of

how these market-oriented farms functioned, specializing in the production of wine and olive oil, respectively. Barbara Tsakirgis in [Chapter 7](#) focuses upon a different aspect of the domestic economy: textile production. She surveys the evidence for loom weights in households across the Greek world, and shows that in many instances, households produced a surplus of textiles that enabled a little extra cash to be generated by selling them in the market, cash that could be spent on purchasing some of the many items noted earlier. Her contribution provides a detailed study of one of the many ways in which households interfaced with the commercial economy of Greek city-states.

The Athenians did not make a formal distinction between the household and the workshop.¹²⁰ In his contribution on workshops in Classical Athens, Peter Acton uses the tools of modern microeconomics to explain why certain kinds of craft workshop in Athens attained a reasonable size and why others did not. He shows that the size of economic units was not limited by views about self-sufficiency and political freedom: the small size of most economic units was shaped by economic factors (not social factors), which meant that there was little possibility of achieving economies of scale for production in the ancient economy.

THE EFFECT OF HOUSEHOLD DEMAND ON THE SPECIALIZATION OF LABOUR

The fact that all Athenian households exerted at least some demand for market products makes our Athenian evidence for the specialization of labour comprehensible. Here we must make a distinction between horizontal and vertical specialization. By horizontal specialization we mean the number of different individual occupations devoted to the production of different individual commodities or performance of specialized services: thus, shoemakers made shoes, helmet makers made helmets, and so on. By vertical specialization we mean the number of individual roles required in the production of a single commodity.¹²¹ High levels of demand for goods that could not be produced at home facilitated the existence of a surprisingly large number of occupations devoted to the production and retail of commodities, as well as various services. Edward Harris (2002) presented evidence for some 170 separate occupations in Classical Athens, most of them in the craft and retail sectors.¹²² It goes without saying that these individuals would not have been able to specialize in the production and retail of specific commodities without high enough levels of demand for their products. We can now add further occupations to the list, bringing the current total to more than 200.¹²³

As Harris (2002) has shown, the Athenian economy was marked by relatively extensive horizontal specialization but relatively little vertical specialization. In other words, few products in Athens required the collaboration of a

number of specialists to produce; this was due primarily to simple technology. Though vertical specialization remained relatively undeveloped, high levels of demand in urban areas did allow it to develop to a small degree in the assembly of some products, as Xenophon was well aware. In the following passage he writes about the preparation of the king of Persia's dinner; in so doing he provides revealing information on vertical specialization of labour in Greek cities.

For just as all other arts are developed to superior excellence in large cities, in that same way the food at the king's palace is also elaborately prepared with superior excellence. For in small towns the same workman makes chairs and doors and ploughs and tables, and often this same artisan builds houses, and even so he is thankful if he can only find employment enough to support him. And it is, of course, impossible for a man of many trades to be proficient in all of them. In large cities, on the other hand, inasmuch as many people have demands to make upon each branch of industry, one trade alone, and very often even less than a whole trade, is enough to support a man: one man, for instance, makes shoes for men, and another for women; and there are places even where one man earns a living by only stitching shoes, another by cutting them out, and yet another by sewing the uppers together, while there is another who performs none of these operations but only assembles the parts. It follows, therefore, as a matter of course, that he who devotes himself to a very highly specialized line of work is bound to do it in the best possible manner. [Xen. *Cyr.* 8.2.5, tr. Miller]¹²⁴

In a society where the rich alone exerted demand for market goods, this degree of vertical specialization could not have developed. Both the high degree of horizontal specialization and the degree of vertical specialization noted by Xenophon in urban areas were a function of high levels of demand for a variety of commodities by Athenian households, and not just those of the liturgical class, but of Athenian society in general. This high level of demand could not have been met by craftsmen working part time. As the passages from Xenophon and Plato's *Republic* indicate, craftsmen clearly had enough orders from numerous customers to keep them busy on a regular basis, and discerning customers would only have been satisfied by products made by craftsmen who devoted all their energies to improving quality.

AVOIDING MARKETS? THE CONCEPT OF AUTARKY AND ITS RELATION TO POPULAR PRACTICES

What, then, of the much-vaunted 'ideology' of autarky? Whilst the average Athenian could have bought a variety of products at market, we have been led to believe that they tried to avoid reliance on markets as far as possible. This was because an ideology of self-sufficiency apparently permeated

Greek society, keeping production and exchange largely within the remit of the household and small local networks, inhibiting the growth of markets and market exchange.¹²⁵

Though commonplace, both the view that an ideology of autarky was hard-wired into the Athenian mind and the view that exchange was limited for the most part to local kin groups are flawed and should be challenged. Let us begin with the allegedly pervasive ideology of self-sufficiency. According to this view, the Greek household sought only to produce enough for its own needs and to avoid dependence on others, viewing *chrematistike*, the art of acquisition without limit, as unnatural.¹²⁶ The main text cited in support of this view is a passage from Aristotle's *Politics* (1.3.1256a1–1258b8),¹²⁷ but the passage needs to be read carefully and in context. Aristotle begins the chapter by asking whether *chrematistike* is the same as *oikonomia* or part of it or subordinate to it (1.3.1256a4–6). Without giving the opinions of others, Aristotle quickly declares that *oikonomike* is not the same as *chrematistike* because the aim of the latter is to acquire or produce, whereas the aim of the former is to use (1.3.1256a12–14). This would appear to identify *chrematistike* with production, *oikonomike* with consumption. Aristotle then slightly alters the question and asks whether *chrematistike* is part of *oikonomike* or a different kind of skill. Here he admits that there is some debate, although he does not say who lines up on each side of the debate (1.3.1256a14–15).

He then launches into an analysis of the different ways that men acquire their food, enumerating the ways men acquire what they need: some men live from raising animals, others from hunting and most from agriculture. This leads him to the conclusion that nature provides plants for consumption by animals, and animals for consumption by men, because nature makes nothing without purpose or in vain (1.3.7.1256b15–23). Aristotle then says that one type of acquisition in accordance with nature forms a part of *oikonomike*. This type either ensures that there is (or provides that there will be) a supply of goods that are necessary for life and useful either for the community or for the household. Here, Aristotle seems to have changed slightly his use of the term *oikonomia* because previously he said that it applied only to the use of goods, not to their acquisition. At this point, he seems implicitly to recognize two aspects to *oikonomia*, acquisition of goods and the use of goods. In this form of acquisition a limit has been fixed because riches are a set of tools for the household and the statesman to use and no tool is without a limit (1.3.9.1256b30–39). What is relevant for our discussion is that Aristotle disagrees with Solon, who said that there was no limit set for riches.

This is highly significant, for it shows that Aristotle's view was not the only one. We cannot simply assume that Aristotle's words represent *the* Greek attitude to self-sufficiency. It may, in fact, have been a minority opinion or a

philosophical idea which was at odds with popular conceptions of wealth. The next section confirms this. Aristotle says that there is another type of acquisition, *chrematistike*, which aims at wealth without limit, and concedes that most people think that it is identical with *oikonomike* (I.3.10.1256b40–1257a3).¹²⁸ Aristotle finds this view mistaken because the latter is in accordance with nature, but the former is not. Here it is clear that the distinction is that of Aristotle, made on the basis of his philosophical notions of what is natural and what is not. Further on in the same chapter he refers to those who believe that it is the function of *oikonomike* either to maintain one's financial assets (*nomismatos ousian*) or to increase them to infinity (I.3.1257b38–41). Once again, it is clear that Aristotle's views about the acquisition of wealth should not be taken as representative of Greek attitudes in general. If one reads the text of the *Politics* carefully, one discovers that the science of *oikonomia*, managing a household, was on the traditional view aimed at increasing one's assets, which implies production for sale in the market.

The popular attitudes to which Aristotle refers are more fully expressed in Xenophon's *Oeconomicus*, or *The Estate-Manager*. The aim of the dialogue is to understand the nature of *oikonomia*, that is, the skill of managing the *oikos*, one's property.¹²⁹ When the dialogue opens, Critobulus is looking for someone who can teach him to manage his property (Xen. *Oec.* 1.1–3). The person who possesses this skill can 'by taking over the estate of someone else pay all necessary taxes and by making a surplus, increase his assets' (Xen. *Oec.* 1.4). Socrates has a moralistic view of what constitutes an asset; for him anything that does damage to the moral character of its owner does not count as an asset (Xen. *Oec.* 1.7–20). Assuming that the owner is morally good, however, his aim will still be to increase their property (Xen. *Oec.* 2.1). This skill does not just enable men to provide for their needs; it makes them capable of increasing their assets if they work (Xen. *Oec.* 1.16). Critobulus asks for Socrates' advice because 'I see that you understand one aspect of creating wealth: making a surplus. So I hope that someone who makes a surplus out of little can very easily make a large surplus out of much' (Xen. *Oec.* 2.10). After some discussion Socrates says, 'we concluded that estate management (*oikonomia*) is the name of a certain type of knowledge, and this knowledge was clearly that by which men increase their property, and that their property was the total amount of what they acquire' (Xen. *Oec.* 6.4). Ischomachus says that his father would buy uncultivated plots of land, make improvements on them, then sell them for a profit (Xen. *Oec.* 20.26). Socrates compares his father to a merchant who buys grain, then sells it wherever he can find the highest price. Despite the difference in social status, the merchant and the gentleman farmer are united in their pursuit of profit. Socrates therefore concludes that 'all men love by nature those things that they think will bring them benefits' (Xen. *Oec.* 20.29).

There is no talk in the dialogue of limiting one's acquisitions to one's natural needs or to achieve *autarkeia*. Critobulus requires a large amount of cash because he has many civic and social obligations. Socrates reminds him:

I see that you are obliged to offer many large sacrifices to the gods; otherwise, I think, both gods and men would object. Next, it is incumbent on you to entertain visitors from abroad, and to do so generously. What is more, you have to invite your fellow citizens to dinners and do them favors; otherwise, you'll have lost your supporters. Furthermore, I notice that the State is already requiring great expenditure from you on things like horse-rearing, financing choruses and athletic competitions, and on administration; and if there should be a war, I'm sure that they will require you to finance triremes and will make you pay an almost unbearable amount of tax. And if you give the impression of not doing enough in any of these areas, I have no doubt that the Athenians will retaliate as severely as if they had caught you stealing from them. (Xen. *Oec.* 2.5–6, tr. Waterfield)

Critobulus cannot retreat into the leisured isolation of self-sufficiency. He is enmeshed in a web of civic and social obligations which compel him to look for ways to extract as much surplus as he can from his household. The head of an Athenian household could not afford to think like a rentier, content to draw a fixed income from his property. If he wished to maintain his position in society, he had to think constantly about ways to increase his income to pay for the expenses imposed on him by his political and social duties. Ischomachus tells Socrates that he prays to the gods that he may obtain health, physical strength, respect in the city, goodwill from his friends, honourable safety in war and wealth increased in an honest way (Xen. *Oec.* 11.8). When Socrates asks him if he cares about gaining wealth when it causes him so much trouble to manage it, Ischomachus replies that he takes pleasure in honouring the gods, helping his friends and adorning the city (Xen. *Oec.* 11.9). Socrates observes that he can pursue these aims only by acquiring a surplus (Xen. *Oec.* 11.10).

We have seen so far that whilst Aristotle himself might have believed in an ideology of self-sufficiency, it is quite another thing to extrapolate one man's philosophical views to the extent that they can be seen as the root of real-life economic practices for the majority of the population. Xenophon's *Oeconomicus* provides a valuable corrective, particularly for the upper echelons of Athenian society, but we should not think of the average citizen farmer as being isolated from markets, as we have noted earlier, nor should we think of him as cherishing an ideology of economic self-sufficiency and isolation.¹³⁰

THE ROLE OF THE STATE

We finish our review of the place of markets in the Greek economy with some considerations regarding the role of the state.¹³¹ The Finleyan view of

the economy, even though it is nowadays subject to constant revision, has bequeathed to scholars several misleading views about the alleged lack of interest of the state in economic affairs – views that even today are scarcely questioned. By contrast, the insights of New Institutional Economics stress the link between the development of the state and the expansion of markets that encourages economic growth.

One notion of Finley is that the state only concerned itself with securing an adequate supply of necessities.¹³² This view has two components: first, that the state was concerned only with imports and not with exports; and second, that state interest in trade and markets was targeted only at grain, shipbuilding timber and metals. Alain Bresson's contribution to this volume (a translation of an essay published in 1987) shows that even in the theoretical literature of Aristotle and Plato imports are always associated with exports, and that states took an interest in both. How could they otherwise have paid for their imports? By comparing practice with theory, Bresson decisively shows that Greek states were just as concerned with selling their surplus produce as they were with importing the commodities they lacked.

Likewise, the notion that Greek states were only interested in the acquisition of grain, timber and metals is rather simplistic: this minimalist approach to the interest of the state in commerce omits a great deal. States such as Athens (but also many others) invested a large amount of resources in developing the infrastructure of markets and trade. For instance, the building of marketplaces supports and encourages the growth of market exchange in several ways. First, it helps to link up buyers and sellers. Buyers do not have to go from one place to another in search of goods; they know that everything they want will be available on a regular basis at a certain place (aside from seasonal variations), which reduces the investment of time and effort required to supply their needs. If the supply of goods in the market is large enough, buyers are able to choose among different commodities provided by different sellers and compare prices and quality to make the best purchase. Competition among sellers helps to keep the supplies constant and prices low. As Douglass North has observed, 'Information costs are reduced by the existence of large numbers of buyers and sellers. Under these conditions, prices embody the same information that would require large search costs by individual buyers and sellers in the absence of an organized market'.¹³³ Sellers too gain several advantages. They too do not have to travel from place to place to find buyers; they know that those wishing to purchase their goods gather at a certain place every day or at frequent intervals. If farmers wishing to sell their produce do not wish to stay in the marketplace for several days to find buyers, they know that they can sell to retailers who will purchase their supplies (Pl. *Resp.* 371b–e). In some cases, the *polis* supported retail trade by building permanent shops, which could be rented out to sellers, or *stoas*, which afforded protection against cold and rain in the winter and against the hot sun in the summer.¹³⁴

But the marketplace is not just a place where buyers and sellers can find each other; it is also a place where they can safely transact business. By the fifth century, if not earlier, many *poleis* appointed magistrates who kept order in the marketplace. These officials, who included *agoranomoi*, made sure that buyers and sellers could make transactions without fear of violence or intimidation.¹³⁵ They also provided weights and measures, which reduced transactions costs and helped to create the trust needed to carry out market exchange.¹³⁶ When transactions are dispersed over a large area, it is impossible for the *polis* to provide these services to buyers and sellers. When exchanges are concentrated in a few places, the *polis* can set up official buildings and appoint officials in these places to regulate transactions in a way that builds trust and reduces transaction costs. Concentrating economic transactions in one place also brings advantages to the *polis* by making it easier to tax sales and increase public revenue.

Mark Woolmer's contribution to this volume questions the notion that Greek states were not interested in trade more generally, but only in securing a supply of necessities. He shows that honours offered to merchants – though frequently bestowed to grain traders – also applied to those involved in the trade in other goods. The Athenian state – and other Greek *poleis* – made concerted efforts to stimulate trade more generally, including the construction of harbours, the maintenance of networks of *proxenoi*, the extension of *ateleia* (tax exemptions) to merchants, the suppression of piracy (including the provision of escorts for merchant ships) and the provision of swift justice in commercial disputes. Woolmer's contribution illustrates an important point stressed by Douglass North: 'Institutions affect the performance of the economy by their effect on the costs of exchange and production.'¹³⁷

We noted earlier in this chapter that regional markets might bring together buyers and sellers to trade in products not available at a local level. Here too, city-states took an active interest in improving the ease with which trade took place. Selene Psoma's study of weight standards in the Greek world shows vividly the degree to which regional markets were supported by the minting of coins on a common regional standard to guarantee smooth and efficient transactions between merchants. Thus, the minting of coins lowered transaction costs not only in exchanges between members of the same *polis* but also in broader regional patterns of exchange.

By shifting the focus to markets (in their various manifestations) and institutions in the Greek world, this volume provides not only a compelling explanation for the degree of economic growth that clearly occurred in the first millennium BCE but also a more balanced assessment of the role of market exchange in the ancient Greek economy than has been available in most studies to date. Much work remains to be done, but we hope that the framework offered here can provide a helpful way of studying markets in the Greek world that steers a sensible course between the excesses of those views which either

present the ancient world as a fully fledged market economy and those which deny or downplay the role of markets altogether.

NOTES

- 1 See Wilkins 2000: 11 note 28.
- 2 See Harris 2002: 75–6.
- 3 Dem. 50.6, 56.9, 42.20, 42.31; cf. *IG* ii² 360 lines 54–56; 408, lines 13–14; Ar. *Ach.* 758–759; Pherecrates fr. 67 K–A.
- 4 Millett 1990: 193.
- 5 See also Arist. *Pol.* 1.4.7–8.1259a; Xen. *Mem.* 2.10. For a garland seller going out of business due to a drop in demand, see Ar. *Thesm.* 450–2. See also Eich 2006: 275–6.
- 6 Goody 2006: 42 attributes Polanyi's and Finley's 'dislike of the market' to 'their socialist ideology.' One must, however, distinguish between Polanyi, who was a Christian Socialist (though in the late 1930s sympathetic to Soviet Communism), and Finley, who in the late 1930s and 1940s was a Stalinist. On Polanyi's political views, see Nafissi 2005: 127–48. For Finley's membership in the Communist Party of the USA during its Stalinist phase, see Shrecker 1986: 172–9 and more recently Tompkins 2013: 28. Finley was identified as a member of the Communist Party of the USA in a sworn testimony by William Canning before the Rapp-Coudert Committee in May 1941 and by Karl Wittfogel and Bella Dodd before the Senate Committee on Internal Security in 1952. The file the FBI kept on Finley records the statements of several 'reliable sources' that Finley was a member of the Communist Party of the USA. Edward Harris would like to thank Daniel Tompkins, who obtained the file under the Freedom of Information Act, for making it available to him.
- 7 Finley 1973: 22 quoting Roll 1945: 373.
- 8 Finley 1973: 22.
- 9 Finley 1973: 23.
- 10 See, however, Loomis 1998, who argues that wages increased during the fourth century BCE as the result of inflation.
- 11 Finley 1973: 26. Finley 1973: 181 at note 29 provides no references to the relevant works of Weber and Hasebroek, citing only Polanyi 1968. Finley's statement is not quite accurate: Weber often used the term 'capitalism' in his analysis of the economies of Ancient Greece and Rome. See Love 1991. Polanyi also argued that in the fourth century BCE Aristotle 'discovered the economy.' Polanyi's view that there were no markets in the ancient Near East has now been widely rejected. See the summary of recent work in Masetti-Rouault 2008; see also Jursa 2010 *passim* and p. 46 on commodity prices.
- 12 Polanyi 1968: 78–115; Love 1991.
- 13 Finley 1973: 27.
- 14 Finley 1973: 34.
- 15 Berry 1967: 106.
- 16 For good reasons not to use the term 'peasant' to describe farmers in ancient Greece, see Hanson 1995: 107.
- 17 Harris 2002a. Cf. Davies 2007 and Archibald and Davies 2011: 6. For the extensive specialization in the Roman Eastern Mediterranean, see Ruffing 2008. For a recent collection of the archaeological evidence for workshops in Attica and the Peloponnese, see Sanidas 2013.
- 18 There was some criticism of Finley before 1995, but it did not tend to focus on the role of markets. Thompson 1982 concentrated on the role of the entrepreneur; Cohen 1992 studied mainly Athenian loans and banking, whose importance he tends to exaggerate. See the review of Bogaert 1995 ('fondée principalement sur une interprétation faussée des sources'), who decisively refutes Cohen's view that Athenian banks made maritime loans. For a more balanced view of the role played by banks in classical Athens see Shipton 1997.

- 19 Hopkins 1983: xi–xii. This summary is quoted with approval by Scheidel, Morris and Saller 2007: 4.
- 20 Hopkins 1983: xiv–xx.
- 21 Hopkins 1983: xx (emphasis added).
- 22 Hopkins 1983: xxiii. Morris 1994b, which purports to be a survey of work about the economy of Ancient Greece since Finley's *The Ancient Economy*, has little to say about the main tenets of Finley's work, and concentrates mainly on criticizing the use of literary evidence and on summarizing recent work in field surveys. There is no discussion of Finley's views about markets.
- 23 Millett 2001: 35. The views expressed in this essay build on his analysis of lending and borrowing in Classical Athens in Millett 1991. For a critique, see Harris 1993b.
- 24 Millett 2001: 35.
- 25 Millett 2001: 24.
- 26 Millett 2001: 35.
- 27 Millett 2001: 37.
- 28 Reger 1994: 49–50.
- 29 Gallant 1991: 101: 'In sum, the market seems to have played only a minor, peripheral role in the domestic economy of most Greek peasants.' Concerning Gallant's analysis, Archibald 2005: 13 rightly notes: 'He presents no evidence to support his view that markets were of exiguous importance.'
- 30 Cartledge 2002: 26.
- 31 Cartledge 2002: 27. In his eagerness to eliminate markets, Cartledge does not pause to consider how the Athenians would have paid for imports without selling exports. Cartledge appears to have overlooked Bresson 1987, translated in this volume.
- 32 Cartledge 2002: 27–8. For perceptive criticisms of Cartledge, see Goody 2006: 40–2.
- 33 Horden and Purcell 2000: 115. Like Cartledge, Horden and Purcell appear to have been unaware of Bresson 1987, which anticipated by more than a decade their remarks about self-sufficiency.
- 34 Horden and Purcell 2000: 205.
- 35 Horden and Purcell 2000: 606.
- 36 Horden and Purcell 2000: 391–400.
- 37 Horden and Purcell 2000: 349.
- 38 The essays in W.V. Harris 2005 about Horden and Purcell 2000 do not address this serious omission. Archibald 2013 notes that scholars have generally ignored the role of the market but makes no mention of Harris 2002a, which demonstrates the link between increased levels of specialization of labour and the growth of markets.
- 39 Morris 2005.
- 40 Manning and Morris 2005.
- 41 Ober 2010.
- 42 Scheidel, Morris and Saller 2007: 9.
- 43 Scheidel, Morris and Saller 2007: 10. This statement greatly underestimates the amount of production for export. See the essays of Bresson, Panagou and Tzochev in this volume.
- 44 Scheidel, Morris and Saller 2007: 10.
- 45 von Reden in Scheidel, Morris and Saller 2007: 403. The chapter by Davies in this volume concerns only production and therefore does not deal with market exchange. Reger's chapter has relatively little to say about the nature and role of markets in the Hellenistic period.
- 46 Davies 1998.
- 47 Bresson 2007–8.
- 48 Archibald and Davies 2011: 3. Few of the essays in this volume aside from those of Bresson, Gabrielsen and von Reden devote much space to a discussion of markets. For instance, the essay of Aperghis concerns tribute and taxation, that of Chaniotis the topic of war and

public finance, that of Davies the role of temple finance, that of Descat slave labour, that of Müller euergetism, that of Chandezon estate management and book-keeping, and those of Archibald and Oliver the mobility of people (with some attention to labour markets). Manning's essay has the word 'markets' in the title but contains little discussion of market exchange.

- 49 Goody 2006: 46. The recent books of Bissa 2009 and Engen 2010 contain hardly any discussion of markets and market exchange and are heavily influenced by Finley's assumptions.
- 50 Despite the widespread presence of marketplaces, Hansen and Nielsen 2004: 1376–81 do not include the *agora* in their list of the standard architectural features of a Greek *polis*. However, Hansen 2006: 104 notes that 'every polis had an *agora*' and provides a critique of the Finleyan view of the subsistence economy, showing that markets were important to all citizens of Greek *poleis* (Hansen 2006: 85–97).
- 51 On the *agora* in Greek city-states, see Hoepfner and Lehmann 2006; Ampolo 2012; Chankowski and Karvonis 2012.
- 52 Cf. Bohannon and Dalton 1962: 1: 'To study markets it is necessary that the distinction between the institution of the market place and the institution of market exchange be pointed up clearly. The market place is a specific site where a group of buyers and a group of sellers meet. The market principle is the determination of prices by the forces of supply and demand regardless of the scale of transactions ...' Cf. Goody 2006: 41: '[T]his discussion depends upon a difference being made between substantive markets (a market place), and an abstract principle of market exchange. My argument is that one does not have one without the other' and Goody 2006: 42–3: 'In my view, the attempt completely to separate off market places and market principles (supply and demand) from other transactional modes is doomed to failure.'
- 53 Polanyi 1968: 139–74.
- 54 Compare the title of Roman and Dalaison 2008: 'L'économie antique, une économie de marché?'
- 55 Polanyi 1957a: 69.
- 56 Cf. Goody 2006: 45.
- 57 Cf. Migeotte 2008: 81: 'les cités grecques ont connu une <<économie à marchés>>.' Migeotte distinguishes among three levels: local exchanges, regional markets and large-scale networks for a certain number of commodities, in particular luxury goods. He does not discuss labour markets and credit markets.
- 58 Archibald 2013: 88–105 sees that there are different types of markets but does not analyze the different types in a systematic way.
- 59 For the date of the social background of the Homeric poems, see Crielaard 1995b.
- 60 On the meaning of the term *agora* in the *Iliad* and *Odyssey*, see Schuller 2006.
- 61 On providing markets for armies, see Pritchett 1971: 45–6.
- 62 Berry 1967: 93.
- 63 See Nollé 1982: 21–8.
- 64 In Campania urban market schedules 'were deliberately arranged in such a way as to enable itinerant salesmen and other market participants to attend *nundinae* of different towns on successive days of the market week' (de Ligt 1993: 237).
- 65 For the sale of slaves at a *panegyris*, see Paus. 10.32.15–16.
- 66 Psoma 2008.
- 67 Berry 1967: 90.
- 68 See North 1990 *passim*.
- 69 See Harris 2002a: 74–6.
- 70 Thompson and Wycherley 1972: 171 note that the book stalls were probably near the old *orchestra* in the middle of the *agora*, since Plato (*Ap.* 26d–e) has Socrates point out that the works of Anaxagoras could be bought there for a drachma.

- 71 *Archaeology* magazine, Nov/Dec 2007, pp. 49–52. The *agorastikon* mentioned in inscriptions from Mesogaia (*SEG* 41.75 [262–240/39 BCE]) and Rhamnous (*IG* ii² 1245 [c. 251/0 BCE] lines 8–9) may not be a tax on goods sold in the *agora*. See Bubelis 2013.
- 72 Kakavogianni and Anetakis 2012.
- 73 Pace Möller 2007: 371: ‘There is no evidence for further *agorai* in Attica outside the city of Athens, Piraeus, and the mining district of Laurion.’ Cf. Osborne 1987: 108 who makes a similar claim. For farmers travelling three to four hours to markets, see MacMullen 1970: 337. Gallant 1991: 100–1 claims that *Ar. Ach.* 32–36 proves ‘the absence of exchange in the Attic village’ but does not cite the evidence of inscriptions (especially the security *horoi* – see Harris, Chapter 5 in this volume), and archaeology that suggests the contrary. We do not know if deme markets met every day or only periodically.
- 74 Attica may not be normative: Hansen 2006b: 71 points out that ‘while most of the population in the small city-states lived in the cities within the walls, most of the population in the big city-states was settled in the hinterland.’ With a smaller territory and closer proximity to the city *agora*, most small and medium-sized *poleis* may not have developed many country markets.
- 75 For a summary, see Reger 2011: 372–8. See also Eich 2006: 105–74, who makes a distinction between local and interregional exchange as well as exchange within the Athenian Empire.
- 76 See Reger 1994.
- 77 Reger 1994: 79, criticizing Polanyi’s view of a ‘world grain market.’ This passage shows that the price of grain was set by the forces of supply and demand. We do not find convincing the view of Moreno 2007b: 322 that the elite controlled the grain supply and that grain was mostly drawn from the ‘surplus product of cleruchies.’ Moreno 2007: 241–2 and *passim* does not analyze the economy of Athens in terms of market exchange and misses the integrative function of markets. For cogent objections to his arguments, see Lytle 2009.
- 78 See Le Rider 1977: 407, 439–41; Price 1982: 181; and Melville-Jones 1978: 184–7.
- 79 On wages of hired labourers at Athens, see Loomis 1998.
- 80 For metics in Athens, see Whitehead 1977.
- 81 For metics in other Greek cities, see Gauthier 1972: 107–56.
- 82 On the mobility of individuals, see the essays in Moatti 2004. On the mobility of Macedonians, see Tataki 1998.
- 83 Feyel 2006: 320–1.
- 84 Feyel 2006: 325–8.
- 85 Feyel 2006: 346–8.
- 86 Feyel 2006: 328.
- 87 Feyel 2006: 349.
- 88 Feyel 2006: 352. Cf. Reger 1994: 58–9.
- 89 For the wages of hired rowers rising in response to an increase in demand, see Xen. *Hell.* 1.5.4–8.
- 90 Samama 2003: 25.
- 91 For Apollonius see Samama 2003: nos. 165 and 166. For Asclepiades see Samama 2003: no. 341.
- 92 For Menocritus see Samama 2003: no. 118.
- 93 North and Thomas 1973. Cf. North 1990: 121 (‘specialization and division of labour requires institutions and organizations to safeguard property rights ... so that capital markets as well as other kinds of exchange can take place with credible commitment on the part of the players’).
- 94 North 1981. One can find no discussion of the importance of property rights in promoting economic growth in Scheidel, Morris and Saller 2007.
- 95 Reger 1994: 60.
- 96 von Reden 2007: 403.
- 97 See Pritchett 1953; Pritchett and Pippin 1956; Amyx 1958. For an analysis of these households, see Foxhall 2007: 21–54.

- 98 Ober 2010: 257–8, although Ober does not take his argument to its logical conclusion and link growth to the expansion of markets.
- 99 Kron 2011.
- 100 Scheidel 2010.
- 101 Ault 2007; Cahill 2002; Tsakirgis, Chapter 7 in this volume.
- 102 This can serve as an extreme example, since such households were more likely to be isolated from market transactions than other types, e.g. metic households, which relied upon the market for food and whose production was market-oriented.
- 103 If dyeing could be done at home (e.g. Ar. *Eccl.* 216), dyes will at least have had to be bought. Cf. Tsakirgis, Chapter 7 in this volume.
- 104 Amyx 1958: 275–80.
- 105 Olson 1991; Sparkes 1962.
- 106 Dem. 27.9 but cf. Xen. *Cyr.* 8.2.5 for amateur production. See also Andrianou 2009.
- 107 A character in a fragment of Plato Comicus (fr. 211 K–A) even mentions buying *tarichos* for his slaves. For *tarichos* as relatively meagre fare, see also Ar. *Ach.* 1101. In Alexis fr. 15 K–A a character reckons up his contribution to a dinner: five *chalkoi* are spent on *tarichos* (cf. Nicostratus fr. 5 K–A).
- 108 See Davidson 1997: 7.
- 109 On sausages, see Frost 1999; for their proverbial cheapness, see Dioxippus fr. 1 K–A. For the market for non-sacrificial meat, see Naiden 2013: 232–75. In Epiphus fr. 15 K–A an owner sends his slave to market to buy Theban eels, small fowl and a hare; the slave retorts that his master is a cheapskate. These items were obviously modestly priced.
- 110 Wilkins 2000: 304–11.
- 111 Pack animals and carts allowed farm produce to be brought to market. On carts, see Lorimer 1903. The demand for carts in Athens enabled the existence of two occupations: wheelwrights (*trochopoioi*) and cartwrights (*hamaxourgoi*). For the maintainance of roads in Attica, see [Arist.] *Ath. Pol.* 54.1. For roads in the deme of Atene, see Lohmann 1993: 235–9. For wagons bringing wine to the *agora*, see Poll. *Onom.* 7.192–3. See also Ehrenberg 1962: plate IV c and V b.
- 112 Cf. Henneberg and Henneberg 2003. Their stable isotope analysis of skeletal remains from urban and rural sites within Metaponto's *chora* 'suggest a substantial proportion of marine food in the diet and a slightly (though not statistically significant) higher proportion of marine food in the diet of urban people' (at p. 34). That the urban dwellers consumed more fish is hardly surprising: what may surprise some is the fact that country dwellers also ate a good deal of fish.
- 113 A special market day: see Lewis, Chapter 14 in this volume.
- 114 For going to the barbers, see Lewis 1995; for Greek bath houses, see Ginouvès 1962.
- 115 Harris 2002a: 77–8.
- 116 See Ehrenberg 1962: 88 note 4.
- 117 Van Wees 2004: 52–3.
- 118 It is hard to know whether the twenty *machairopoioi* owned by Demosthenes' father (Dem. 27.9) were makers of swords: the term *machaira* has a broad semantic range and includes butcher's knives, razors and shearing knives as well as weapons. See appendix s.v.
- 119 For such a picture, see Braund 1994.
- 120 Harris 2002a: 82–3; Harris 2015.
- 121 See Harris 2002a: 70–1.
- 122 By this we do not mean that most individuals worked in retail or crafts; clearly agriculture was the largest single occupation (Harris 2002a: 69).
- 123 Note that some of these terms are synonyms for occupations listed in Harris 2002a, and thus have not added numerically to our total. Terms with an asterisk denote conjectural forms for attested occupations. **Bowyer** (*toxopoios**: Poll. *Onom.* 7.156); **swordsmith** (*xiphourgos*: Ar. *Pax* 547); **woodcutter** (*hylotomos*: IG I³ 1361; cf. Arist. *Pol.* 1258b.31 '*hylotomia*'); **wood-carrier** (*hylophoros*: Aristomenes, testimonium iv K–A); **funeral urn-maker**

(*soropegos*: Ar. Nub. 846; *soropoios*: Poll. Onom. 10.150); **rope-maker** (*skoinoplokos*: Callias I testimonia i–ii K–A); **door-maker** (*thuropoios*: Aristomenes testimonia i–ii K–A; Poll. Onom. 7.111); **well-digger** (*phreorychos*: Philyllius fr. 17 K–A.); **gold-seller** (*chrysopoles*: Ameipsias fr. 26 K–A); **sieve-maker** (*koskinopoios*: Philyllius fr. 13 K–A); **sieve-seller** (*koskinopoles*: Nicophon fr. 10 K–A); **sardine-seller** (*membradopoles*: Nicophon fr. 10 K–A, a sub-specialization of *ichthuopoles*); **dried fig-seller** (*ischadopoles*: Nicophon fr. 10 K–A); **leather-seller** (*diphtheropoles*: Nicophon fr. 10 K–A, but must be the same as *bur-sopoles* in Harris 2002a); **barley-dealer** (*alphitopoles*: Nicophon fr. 10 K–A, but must be the same as *alphitamoibos* in Harris 2002a [but see the remarks of Ehrenberg 1962: 119 note 6 on *alphitamoibos*]); **spoon-seller** (*mystriopoles*: Nicophon fr. 10 K–A); **cake-seller** (*enkridopoles*: Nicophon fr. 10 K–A); **seed-seller** (*spermatopoles*: Nicophon fr. 10 K–A); **ribbon-seller** (*tainiopolis*: Eupolis fr. 262 K–A); **yoke-maker** (*zygopoios*: Pherecrates fr. 137 K–A); **cartwright** (*hamaxourgos*: Ar. Eq. 464); **trough-maker** (*holmopoios*: Arist. Pol. 1275b.28); **pestle-maker** (*doidukopoios*: Plut. Phoc. 4.1); **shield-seller** (*kapelos aspidon*: Ar. Pax 447); **ring-maker** (*daktyliourgos*: Pherecrates fr. 234 K–A; Philyllius fr. 14 K–A, but must be the same as *daktyliopoles* in Harris 2002a); **maker of mattocks** (*ho ... sminuas poiou*: Ar. Pax 546); **sausage-maker** (*allantopoios* – the profession of the father of one of Socrates' students: Diog. Laert. 2.60 – but must be the same as *allantopoles*, who both manufactures and sells sausages: see Ar. Eq. 160–161; 356–358); **flute-borer** (*aulotrupes*: Strattis fr. 3 K–A; Arist. Prob. 919b7 – but must be the same as *aulopoios* in Harris 2002a); **image-maker** (*koro-plathos*: Pl. Tht. 147b, Isoc. 15.2; Strattis fr. 21 K–A); **quail-catcher** (*ortygotheras*: Pl. Euthyd. 290d); **quail-rearer** (*ortygotrophos*: Pl. Euthyd. 290d; Ar. fr. 242 Kock; Eupolis fr. 226 K–A); **sheep-seller** (*probatokapelos*: Callias I fr. 21 K–A, but must be the same as *probatopoles* in Harris 2002); **fowler/ bird-catcher** (*ornitheutes*: Ar. Av. 526; Pl. Leg. 824b; Plato Comicus fr. 172 K–A); **slave-dealer** (*andrapodokapelos*: Hyp. Against Timandros lines 31–2); **pig-seller** (*choiropoles*: Ar. fr. 589 K–A; Ach. 818); **bran-seller** (*kyrebiopoles*: Ar. fr. 716); **laurel-seller** (*daphnopoles*: Ar. fr. 805); **wheat-groat seller** (*chidropoles*: Poll. 7.199); **mill-stone cutter** (*mulokopos*: Poll. Onom. 7.20); **house-builder**: (*oikodomos*: Ar. fr. 186 K–A; Pl. Prt. 319b); **seller of emetics** (*syrmaiopoles*: Ar. fr. 269b K–A); **carriers of clay or mortar** (*hoi pelophorountes*: Ar. Eccl. 310).

124 Cf. Pl. Resp. 370c–e.

125 Millett 1984 views the world of Hesiod's *Works and Days* as a 'peasant' society. Although rightly critical of some of the more dubious attempts to upgrade Hesiod to a quasi-aristocrat, Millett places Hesiod too close to the 'peasants occasionally and reluctantly exchanging produce' that M. Darling studied in India. Hesiod's advice to Perses envisages a farm whose surplus can be disposed of by maritime traders (*Op.* 618–694) and that is worked by slave labour (*Op.* 441, 459, 470, 502, 573, 597, 608, 766), allowing the proprietor to buy Byblian wine (*Op.* 589), hire temporary labour (*Op.* 602–603) and aspire to purchase the land of another man (*Op.* 341). These passages show that however important an ideology of self-sufficiency is to the *Works and Days* (e.g. Canevaro 2013) it did not reflect economic realities. For a more judicious analysis of Hesiod's economic position, see van Wees 2009.

126 For *autarkeia* as the Greek ideal, see Austin and Vidal-Naquet 1977: 13, 15–17, 41–2, 46, 90, 108, 132, 191, 203–4, 292, 295, 334, 377–8. Foxhall 2007: 37 writes that 'autarkia was important, at least as a moral value and perhaps as an economic value as well.' This analysis of the passages from Aristotle draws on Harris 2015: 192–6.

127 Austin & Vidal-Naquet 1977: 162–8; Finley 1973: 40–4.

128 Aristotle appears to allude to popular views here, but it is worth noting that Plato used the terms *oikonomia* and *chrematistike* interchangeably (*Resp.* 415e and 417a). Aristotle himself in the *Ethics* (1094a9) says that the goal of *oikonomia* is wealth. On this topic, see Faraguna 1994.

129 For the meaning of *oikos* ('one's assets'), see MacDowell 1989. It should not be translated as 'family.' This is certainly the definition Xenophon has Socrates follow (1.6).

- 130 Pace Foxhall 2007: 37: 'the primary aims of small-scale farmers were likely to have been be (*sic*) self-sufficiency and survival.' For a less pessimistic picture of peasant farmers, see Kron 2008, although he concentrates mainly on Roman peasants.
- 131 It has proven popular among some historians to characterize the Greek polis as a 'stateless' community (Hunter 1994; Behrent 2000). This view is untenable: see Hansen 1998: 37–40; Harris 2013: 21–59.
- 132 For this view, see Bissa 2009; Engen 2010.
- 133 North 1981: 36.
- 134 On the Greek stoa, see Coulton 1976.
- 135 On *agoranomoi* and other market officials in the Greek cities, see Fantasia 2012 and the essays about Greek cities in Capdetrey and Hasenohr 2012, especially Oliver 2012.
- 136 For weights and measures at Athens, see, for example, Crosby and Lang 1964.
- 137 North 1990: 5.

PART I

CREATING THE FOUNDATIONS OF MARKET EXCHANGE

The Role of the State

ARISTOTLE AND FOREIGN TRADE

Alain Bresson (translated by Edward M. Harris)

The issue at hand is by no means an insignificant one: it concerns the very nature of the ancient economy, a subject that has divided the academic world for almost a century. When one speaks of the ‘nature of the ancient economy,’ one refers not only to the type and quantity of concrete economic transactions but also to the way in which the economy interacted with social and political life. Moreover, it is almost misleading to speak of ‘controversies and divisions in the academic world’ given the current state of affairs. In fact, except for a few isolated voices, there is a set of ideas that now prevails almost without opposition in the study of the ancient economy.¹ The most elaborate presentation of these ideas can be found in two works: *The Ancient Economy* of M.I. Finley² and *Economic and Social History of Ancient Greece* of M.M. Austin and P. Vidal-Naquet.³ In this essay we will not review once again the old controversies between primitivists and modernists, something that has been done many times from the same point of view. The theories of Karl Polanyi, which have been effectively applied by M.I. Finley and those influenced by him, are supposed to have at last provided the right solution for these controversies.

In fact, it is not easy to take any position opposed to the ‘New Orthodoxy,’ the term coined for this school of thought by K. Hopkins, who is himself one of its main representatives.⁴ We should be grateful to M.I. Finley for justly criticizing the crudest modernist views, which assumed that the ancient economy functioned in exactly the same way as the modern economy does. Thus, for example, would anyone today dare to claim that ancient

societies lived from the production and sale of manufactured commodities to the same extent that modern societies do? In the same way, the emphasis on the role of agriculture as the main factor in production can no longer be doubted in any way. On the other hand, we should immediately bear in mind that this description of the ancient economy is not really original: to adopt such an approach is to return to what seemed obvious for scholars of the nineteenth century, partly because they lived in a world that was closer to that of pre-industrial societies, but also without a doubt because they knew better than their immediate successors that one should not reject the portrait painted by our sources of a society in which agriculture played a key role as a factor in production. These remarks should suffice to show that agreement about certain theories held by the New Orthodoxy does not a priori imply complete agreement with the entire approach. Such agreement may simply result from a similar analysis of the same evidence even if this evidence has been long neglected. It is therefore also clear that challenging the ideas of the New Orthodoxy in other regards does not necessarily imply a return to the outdated theories of modernism.

This is certainly not the place to present a 'General Theory of the Economy,' which would claim to replace the New Orthodoxy. There is a very simple reason for this: such a general theory, if indeed there must be a general theory, could not be sketched in a few sentences, based on a priori concepts and ready-made formulas, of the sort that might stir the imagination and win short-lived acceptance but not lead to any lasting results. There is nothing more dangerous than to present prematurely ambitious theories, which are only generalizations based on tentative conclusions and often turn out several years later to be questionable, if not completely untenable. A reasonable theoretical assessment in the field of ancient history will only be possible after a series of studies in which the main issues are examined. We should be grateful to the New Orthodoxy for raising these issues at a time when modernism and its *de facto* ally, positivism, held sway.

Among these key issues,⁵ there is a view that has become one of the foundations of the New Orthodoxy: the absence of any practical policy or any political discussion about foreign trade in the city-states of the ancient Greek world. Strictly speaking, there was only one exception: the Greek city-states had a policy of securing the imports necessary to maintain their population's food supply. Beyond that, the state's attitude was only a reflection of a universal lack of interest about economic matters and in general about foreign commerce, in particular about exports.

The most significant arguments on this topic have been those made by M.I. Finley in the chapter 'The State and the Economy' in *The Ancient Economy*:

The existing documentation, admittedly thin, is marked by a complete absence of anything we can recognize as commercial clause, or

even references. This is not to say that commercial agreements were never entered into. Aristotle (*Rhetoric* 1360a12–13) included food supply (*trophē*) – his choice of words is noteworthy – among the subjects on which a political leader must be proficient so as to negotiate inter-city agreements.⁶

The lack of any interest in the economy is especially clear in the absence of any measures protecting local production. ‘Just consider the implications of a universal harbour-tax, levied at the same rate on all import and all exports. There was no idea of protecting home production, or encouraging essential imports or looking after the balance of trade.’⁷

One finds exactly the same tone in *Economic and Social History of Ancient Greece*:

When one says that Greek cities had an economic policy, what one means in practice is usually that they had an import policy which aimed at ensuring the supplying of the city and the citizens with a number of goods essential for their livelihood, but not an export policy aimed at disposing on favourable terms or even imposing abroad ‘national’ produce in competition with rival cities. If a Greek city took into account the economic interests of its members, it was solely as consumers and not as producers. One cannot therefore talk of any ‘commercial policy’ on the part of the Greek cities except in a deliberately very restricted sense: what they practised was solely an import not an export policy.⁸

These statements set the parameters of the debate. Because Aristotle has been summoned as the main witness by the most distinguished advocates of the New Orthodoxy, it is Aristotle whose testimony we should examine first.

THEORY

Aristotle develops his theoretical ideas about foreign trade mainly in the *Politics*. He returns to the subject from a practical point of view in the *Rhetoric*.⁹

In the *Politics*, as we know, Aristotle’s starting point is that the city, like every community, is created with a certain aim in mind. Formed by the coalescence of smaller units (villages, etc.), the city reaches the level of complete self-sufficiency (αὐτάρκεια), so to speak. Once formed, the city exists for ‘the good life’ (τὸ εὖ ζῆν). The goal and the best condition for the state is nothing other than self-sufficiency (1.1.8: αὐτάρκεια καὶ τέλος καὶ βέλτιστον). Because self-sufficiency is by definition impossible for a single person – if someone were to achieve it, he would be an animal or a god (1.1.12), in any case a creature without a community – autarky is at once the goal and the ideal for the city. Some other passages in the *Politics* and the *Nicomachean Ethics* show that autarky should be understood both in a physical sense (the availability of all the goods necessary for a worthy life) and in a moral sense (an environment

that permits all members of the community to pursue happiness by developing their full potential).¹⁰

If autarky, understood in the physical sense, is an ideal, we would have to conclude (even if he does not do so himself) that for Aristotle the city should be completely cut off from foreign trade. Moreover, this idea is perfectly consistent with the distrust Aristotle openly expresses toward foreigners in general and merchants in particular in the tradition of the *Laws*, in which Plato describes in detail the way one can make the city as isolated as possible.¹¹ If one thinks of all the various ways of restricting social life or the citizen-body that one encounters during the fifth and fourth centuries BCE in very different forms in a sample of cities going from Sparta to Athens (to take as examples two cities from the Classical period and absolutely different from one another), it is clear that the desire for isolation, for the ability to rely on one's own resources, was present everywhere throughout Greece.

Just the same, Aristotle nowhere goes so far as to state explicitly that a city without foreign commerce would be ideal. When discussing the material aspects of autarky obtained by the *chora* of a city, he stresses a point that is, after all, self-evident, namely that one should wish to have the maximum amount of resources available in one's territory: 'Things are similar also in the case of the territory. For, as regards what sort it is like, everyone would clearly praise the territory that was most self-sufficient, and such a territory must be one that produces everything (for self-sufficiency is having everything to hand and being deficient in nothing).'¹² Aristotle continues by promising a discussion of this topic: 'But whether we speak correctly in giving this definition or not must be left for closer study elsewhere.'¹³ Unfortunately, this discussion has not been preserved. In fact, not only does Aristotle never imagine the absence of foreign commerce; he clearly sets forth his own individual philosophy about the role of exchange in the city.

In practice, one cannot ever do without exchange. To live from one's own resources was still possible in the most primitive forms of social life, in which men produced what they needed directly from the soil.¹⁴ In contrast, as soon as the city reaches a certain point of growth, it becomes impossible to do without trade. It is at this point that Aristotle introduces specific points, which begin to provide a clear outline of his attitude toward foreign trade:

(At first) they exchange useful things for useful things and no further – for instance, giving wine and receiving grain, and so on with other things of the same sort. This art of exchange is neither against nature nor is it any kind of business since it was only for achieving the self-sufficiency that accords with nature. But the art of acquisition arose logically from this art. For when, through importing what they lacked and exporting what they had in abundance, people received help from foreign sources, the use of money was introduced by necessity.¹⁵

These statements are found in the context of a general argument about the art of acquisition (ἡ κτητική).¹⁶ The topic here is a philosophical analysis of acquisition in its natural form, not a discussion about the practices of the state. But it is very clear that the examples chosen (exchange of wine for grain – one finds the same example in the *Nicomachean Ethics*), the terminology used ('help from foreign sources,' imports and exports), and the explicit reference to self-sufficiency, which, as we have seen earlier, was the 'aim and the ideal' of the city, all show that Aristotle develops his theoretical analysis by taking foreign trade as his example.

Let us set aside the question of money, which does not enter into our analysis.¹⁷ From Aristotle's discussion, one should keep four points in mind:

1. Aristotle considers it self-evident that a city cannot exist without exchange with foreign communities. Even if (as we have already seen from the earlier discussion) one would like to have a *chora* that allows the city to be as self-sufficient as possible, the philosopher does not waste his time constructing a model of an imaginary city that has access to every kind of product in the world. He considers it self-evident that no city will ever be able to have access to everything it needs, whether it is foodstuffs, wood, metal, or anything else.
2. Foreign trade is therefore a clear and absolute necessity. By 'foreign trade' we mean both imports and exports, which are inextricably linked. We will come back to this point.
3. Foreign trade that is limited to 'achieving natural self-sufficiency' forms part of 'the natural skill of acquisition.' It therefore receives the approval of the philosopher, who elsewhere insists on the destructive character of *chrematistike*, which he discusses at length. *Chrematistike* is the mode of acquisition in which acquisition is an end in itself, whose aim is not the satisfaction of a need, but the 'inexhaustible thirst for gold.' Entirely artificial, *chrematistike* is, as we know, harshly condemned by Aristotle.
4. At the same time Aristotle states with considerable regret that *chrematistike*, the bad mode of acquisition, is inextricably tied to trade because it is 'logically' (κατὰ λόγον) based on the natural mode of acquisition in the same way that money is introduced 'by necessity' (ἐξ ἀνάγκης).

Thus, foreign trade is very much present in Aristotle's thought, with limits that he finds desirable for this activity. In this respect, one can establish a parallel between the conditions that prevail for exchange between individuals – that is, exchanges taking place within a community – and foreign trade. In reality, it is necessary that individuals be able to exchange because this is the 'best way to achieve full independence.'¹⁸ In the same way, it is desirable that the city be placed in a suitable geographical location so that it can easily attract foodstuffs, wood, and other necessary commodities.¹⁹ Finally, it is necessary that the city have easy access to the sea despite the social and political risks foreign

merchants may pose.²⁰ By the same token, it is perfectly logical that Aristotle emphasizes that one should be familiar with three key components. These are:

- Effort needed for natural production (agriculture).
- Exchange along with commerce (in terms of chartering, transportation, and sale), loans with interest, hired labor.
- The exploitation of wood and the extraction of minerals (this activity is viewed as intermediary between the first two components).²¹

When it comes to foreign commerce, Aristotle takes the community's needs into account. This idea, which we have already encountered, is clearly stressed again in Book VII: 'it is for its own benefit that a city must engage in trade.'²² Above all, the main aim is to satisfy the need for *trophe*, foodstuffs, but it is also necessary for other basic commodities that are indispensable (wood, metal, etc.). But despite what M.I. Finley,²³ M.M. Austin, and P. Vidal-Naquet may claim, this import policy is always linked in Aristotle's thought to an export policy. This concept is also inextricably connected with another similar concept: the city should strive to acquire what it lacks and to dispose of its surpluses. Aristotle returns to this issue four different times:

1. In *Politics* 1.3.10 in a theoretical analysis of the modes of acquisition (this is the passage we discussed earlier).
2. In *Politics* 7.5.4: 'The import of all the commodities that one does not find in the country and the export of a surplus form a part of the necessary conditions.'²⁴
3. In *Rhetoric* 1.4.11.1360a: the political leader should know what the city produces and what it lacks and with which communities one should conclude treaties about imports and exports (this passage as been misunderstood; we will discuss it later in the chapter).
4. In *Nicomachean Ethics* 5.5.13.1133b. Aristotle says: ὅτι δ' ἡ χρεία συνέχει ὥσπερ ἐν τι ὄν, δηλοῖ ὅτι ὅταν μὴ ἐν χρεῖα ὡσιν ἀλλήλων ἢ ἀμφοτέροι ἢ ἄτερος οὐκ ἀλλάττονται, ὥσπερ ὅταν οὗ ἔχει αὐτὸς δέηται τις οἶον οἴνου, διδόντες σίτου ἐξαγωγήν. Δεῖ ἄρα τοῦτο ἰσασθῆναι.

The text has appeared difficult because of the part of the sentence: ὥσπερ ὅταν ... ἐξαγωγήν. Up to this point the meaning is clear. Here is our translation: 'That it is need that keeps groups together by providing a common unity is proven by this fact: if there are no reciprocal needs existing between the two parties, whether it be on the part of both at the same time or only from one, they do not trade with each other.' But what follows appears incomprehensible. Some, who follow Münscher, choose to insert οὐ before ἔχει. For example, R. Gauthier and J. Y. Jolif translate in this way: 'Such is the case if someone needs what one does not have oneself.'²⁵ Others, such as H. Rackham,²⁶ think that the clauses 'make neither grammar nor sense' and that there has been an interpolation; the British translator rejects Münscher's suggestion 'as there seems to be no question here of foreign commerce.'

To start with, let us note that, whatever its precise meaning, the phrase in question fits well into the discussion of need as a social bond for one to reject it without examining it further. With the correction of Münscher, one obtains a meaning, which, if not in strict conformity with the text, at least appears to be acceptable (we have already seen in an earlier discussion how in the *Politics* an example taken from foreign trade can serve as evidence in a theoretical analysis). But in fact, one does not even need Münscher's correction. Aristotle's prose, simultaneously technical and abstract, is subordinated to an idea that uses the same terms again and again to indicate the steps in his argument. As a result, his language often takes the reader's understanding for granted in order to avoid irritating repetitions. Thus, for example, the article employed by itself often refers to a noun, which is either implicit or has already been mentioned. One finds a good example of the verb ἔχω accompanied by an understood subject at *Rhetoric* 2.7.1.1385a (on obligation): to avoid too many repetitions, the noun χάριν is not repeated each time.²⁷ In the passage we are examining in the *Nicomachean Ethics*, the word χρεῖα has already been used twice in the sentence, and χρεῖα is the subject of the discussion. One should also understand that Aristotle implies the word χρεῖαν here in the standard expression χρεῖαν ἔχειν. The true meaning is, therefore: 'Just as when the other person lacks what one needs oneself (οὗ ἔχει – χρεῖαν – αὐτός), for example, wheat, and the two parties offer an export license for wine.' In this case, to the extent that the two parties need to import the same commodity and both propose to export the same product, there is no possibility of exchange between them. This is why Aristotle concludes: δεῖ ἄρα τοῦτο ἰσασθῆναι, 'it is therefore necessary to put the relationship on an equal basis'. The way in which needs can be placed on an equal basis in similar cases by the use of money is the subject of the following discussion with the analysis of deferred exchange. Nowhere in Aristotle is it explicitly stated that exports serve to finance imports (this could scarcely be the case when considering 'surpluses' and 'deficiencies' originating in nature). But the connection repeatedly made between importing and exporting nevertheless points in this direction. However, the idea surfaces almost explicitly when he discusses deferred exchange.²⁸ At any rate, there is nothing mysterious about this, nothing that would justify the description 'a speculative translation of a speculative text' (is it because the discussion is about exporting?) given by M.M. Austin and P. Vidal-Naquet in the commentary on their version of the passage.²⁹

Now, if one makes a survey of other authors, one discovers that Aristotle's statement is by no means unusual.

- Thucydides has the Corinthian ambassadors make the following statement on the eve of the Peloponnesian War: 'As for others, who are settled in the interior, far away from sea-routes, if they do not defend those living on the coasts, they will have a hard time disposing of their produce and as a result also find it difficult to acquire in exchange what the sea provides for the dry land' (τὴν

κατακομίδην τῶν ὠραίων καὶ πάλιν ἀντίληψιν ὧν ἡ θάλασσα τῇ ἡπείρῳ δίδωσι).³⁰

- Isocrates has a theory of deficiencies and surpluses that resembles Aristotle's but with a clearer vision of sharing sources of wealth among different cities: 'Moreover, each population does not possess a territory that can provide for all its needs. Sometimes it lacks an item; sometimes it produces more than necessary'.³¹
- For the doctrinaire Plato of the *Laws*, who is so strict about excluding foreigners, exports and imports (the two activities are mentioned side by side, it must be emphasized, three different times) are limited to a strict minimum (strategic goods and similar items). This is placed under the rigorous control of the city.³²
- In the historian Xenophon, one finds an interesting allusion to foreign trade in a speech given by Jason of Pherai,³³ in which he compares his growing power with that of Athens: 'By gaining control of Macedonia, from which the Athenians have their timber imported,³⁴ we will be in a position to construct many more ships than they do. The Penestai will provide sailors, and who will be in the best position to feed these sailors, we who have so much wheat that we export it or the Athenians who do not have enough to supply their own needs without buying it from abroad?' Thus Jason proposes to use the normal surpluses, which allow the Thessalians to export grain, to feed the sailors of his fleet.
- In Polybius the ideal situation for a city is to be able to import and export under optimal conditions. Such was the case for Byzantium: 'It is perhaps the Byzantines who enjoy the greatest advantages (i.e. from the existence of the trade-route from the Black Sea, which Polybius discusses in this passage) due to its unusual location. In fact, they can export the entire surplus of their produce (ἅπαν γὰρ τὸ περιττεῦον παρ' αὐτοῖς) and to make up for what they lacked, they could directly import with much benefit, without difficulty and without risk.'³⁵

One can see that Aristotle's ideas (importing what one lacks, exportation of surplus) are by no means unusual, not only for his own period but also for Greek and Hellenistic thought in general because they are also found in an identical form in Polybius. Moreover, rather than being the specific product of a particular school whose teachings were passed directly to Polybius, one has the distinct impression of a *communis opinio* concerning to foreign trade. In fact, paradoxically enough given the chronology, one of the most interesting views about this topic is that of the Old Oligarch. This author basically stresses the healthy level of exports for many cities. We borrow the translation of Marr and Rhodes³⁶:

They alone of the Greeks and non-Greeks are able to possess naval wealth. For if some city is rich in timber for shipbuilding where will it dispose of it, if it does not have the consent of the ruler of the sea? What if a city is rich in iron or copper or flax? Where will it dispose

of it, it does not have the consent of the ruler of the sea? And yet it is from these very materials that I get my ships, taking timber from one place, iron from another. Furthermore they will prevent any of our rivals from transporting these materials as a cargo to any other place, with the threat that, otherwise, they will be stopped from using the sea at all? Thus, despite producing nothing from my land, I possess all these materials because of the sea. Yet no other city has two of these things. Timber and flax are not found in the same city; rather, where there is an abundance of flax, the land is flat and timberless. Copper and iron do not come from the same city either, nor is there any other combination of two or three of the materials to be found in any one city, but, rather, there is just one in this place, another in that.³⁷

The tone is different from that of Aristotle. The examples are more numerous and more specific (Aristotle does not go beyond *trophe*). Above all, it is not a question of surplus (cf. πλεονάζω, *Pol.* 7.6.4), but rather of ‘wealth’ (use of πλουτέω) derived from such and such a commodity. The highly original and perceptive character of the Old Oligarch’s work is evident in its analysis of economics as well as in that of politics. In Aristotle, foreign trade is viewed, as with all other aspects of the city, from the perspective of a vision of how life ought to be. Here we have a vision freed from the ideological baggage of a normative approach, one that is therefore much closer to reality, to the actual interplay of interests set in motion by foreign trade regardless of the ideology (naturally quite varied) of those involved in this activity.

But it is perhaps in a place where we would least expect it, in the writings of Plato, that one actually finds the most original point of view. In the *Republic*, Socrates sets himself the task of examining the city. He explains its origins, based on an association of partners, who are linked together by the fact that each one needs (χρεῖα) the others. The division of labor within the city allows everyone to save time while at the same time ensuring the manufacture of goods of the highest quality.³⁸ At this point another problem arises – the question of foreign trade:

‘And there is another thing,’ I said. ‘It would be almost impossible to build the state itself in the sort of place where there is no call for imported goods.’

‘Yes, impossible.’

‘Then we shall need yet other things that we lack which will be brought in from another state.’

‘We shall.’

‘And there again if the supplier arrives empty handed without bringing any of the things which are needed by those people who are supplying what his people need, he will go away empty handed, won’t he?’

‘I should think so.’

‘So they must make not only enough for their own use, but also enough of the kind of things the other people need.’

‘They must.’

‘Then we need more farmers and other artisans for our state.’

‘We do.’³⁹

Thus for Plato’s Socrates, it is fundamentally clear on the one hand that the state cannot survive without foreign trade (this is obvious to him), and on the other that in order to pay for imports one must assume an equal amount of exports. If one examines the passage in greater detail, one also notices that Plato accepts as quite natural the idea that one part of production should be specifically adjusted, in nature, in quality and in volume, to the individual needs of the countries that are one’s trading partners. Finally, it is clear to him that some of the city’s workers are employed in financing exports by their own labor, which is the natural corollary of the preceding argument. We have already seen that the idea of paying for imports through exports is implicit in Aristotle. On the other hand, the idea of adjusting a fraction of local production for the need to export is not found in Aristotle, at least in the extant parts of his works. This is without a doubt no accident: the normative vision hostile to *chrematistike* is even more pronounced in Aristotle than it is in his master. Plato is considered an idealist who cared little about the reality of daily life, but this is only partly true. He presents his ideas as if they were self-evident truths, which encourages us to think that his thought was inspired by what he could observe on a daily basis in the most advanced cities of the Aegean world.

On a theoretical level, the idea of needs and surpluses (or ‘needs balancing surpluses’) certainly prevailed. The view of the Old Oligarch that cities derived their wealth from the natural resources of their territory, which differed from place to place, and that of Plato, who goes so far as to stress the need to devote a portion of domestic production to supply the needs of trading partners, appear to be outliers. But these differences of degree in the detailed analysis of the problem posed by foreign trade do not imply any differences about basic premises. In all cases, the starting point for the analysis of all these authors is always the same: the aim is to make up for what one inevitably lacks by exports. The idea of the city’s self-sufficiency does not rule out any consideration of foreign trade. On the contrary, the theory of self-sufficiency includes by definition a consideration of imports and exports because ancient authors knew very well that no city could provide for all its needs. Just as the man living completely on his own is nothing but a savage in Aristotle’s eyes, similar to the Cyclopes of the *Odyssey* who live apart from each other removed from any social contact, in the same way a city cannot live in isolation, but needs to interact with its neighbors to obtain what it lacks. For the individual as for the city, it is need (*χρεία*) that creates bonds with others.

PRACTICE

By analyzing the relationship between theory and practice, we have already touched upon the second aspect, namely the actual modes of a city's organization of foreign trade. Here the *Rhetoric* will serve as the connecting thread in our discussion. For Aristotle, a city's leaders should take five subjects into consideration:

- ways of gaining revenue (πόροι)⁴⁰;
- war and peace;
- protection of the territory;
- imports and exports (τὰ εἰσαγόμενα καὶ ἐξαγόμενα);
- legislation.⁴¹

To begin with, one may note that the problem of foreign trade in the form of imports and exports is described as one of the most important issues for a city. It may be by chance, but the topic is placed ahead of legislation – an issue that we know was very important for the ancient Greeks. The passage deserves a detailed analysis:

Ἔτι δὲ περὶ τροφῆς, πόση δαπάνη ἱκανὴ τῇ πόλει, καὶ ποία, ἢ αὐτοῦ τε γιγνομένη καὶ εἰσαγωγίμος, καὶ τίνων τ' ἐξαγωγῆς δέονται καὶ τίνων εἰσαγωγῆς, ἵνα πρὸς τούτους καὶ συνθῆκαι καὶ συμβολαὶ γίνωνται πρὸς δύο γάρ διαφυλάττειν ἀναγκαῖον ἀνεγκλήτους τοὺς πολίτας, πρὸς τε τοὺς κρείττους καὶ πρὸς τοὺς εἰς ταῦτα χρησίμους.⁴²

The meaning of the first part is clear. We give the following translation: 'Further in regard to food, [it is necessary] to know what expenditure is adequate for the city and what kinds are on hand and what can be imported' (trans. adapted from Kennedy). Here again we find explicitly mentioned the concept of foreign trade whose function is to supply what is not being produced by balancing imports (the argument is implicit) with the export of surpluses. The word *trophe* is translated as 'foodstuffs', this being its normal meaning. Yet given that Aristotle cannot have been unaware of the fact that the objects of foreign trade also included other products (wood, metal, etc.), one may suspect that the word referred in fact to the 'the total amount of food and supplies needed to survive'. But the important point occurs in the rest of the text, particularly the sentence from καὶ τίνων το γίνωνται. The passage has been translated by Dufour: 'Ceux [i.e. les produits] qu'il faut exporter et ceux qu'il faut importer, afin de conclure avec les peuples pouvant les recevoir ou les fournir pactes et conventions'. Gauthier remarks:

After much hesitation, I have reproduced the translation of Dufour, which is the normal translation. It contains two drawbacks: first, it repeats

the same idea (“the products that are imported” “those that one must import”); second, τούτους is a demonstrative “hanging in mid-air,” which requires an explanation. One wonders if the two τίνων are not masculine (referring to τούτους), denoting communities that are indispensable for the city either for exports or for imports; but the construction is clumsy.⁴³

Gauthier has well pointed out the difficulties in M. Dufour’s translation. There is nothing more to add except that one must reject this translation because it is unacceptable. As for the syntax of the sentence, it does not actually pose any real problem as long as one accepts the clear meaning of Aristotle’s words. The verb δέομαι has two meanings, one very close to the other: to lack something (constructed with the accusative or the genitive of the object) and to ask for something from someone, which is constructed either with the genitive of the person and the accusative of the object or with the genitive of both subject and object.⁴⁴ It is clearly the second meaning with the construction using the double genitive, which fits the context here. One should translate: ‘[And one must know] the states from which to request an export license, and those from whom to request an import license in order to conclude συνθήκαι and συμβολαί with them’.⁴⁵ The idea that a city might be concerned with foreign trade – and remember that, according to Aristotle, it is one of the five key subjects about which statesmen must deliberate – and even request import and export licenses from other cities contradicts the ‘New Orthodoxy.’

There can be no doubt that there existed certain συνθήκαι and συμβολαί concerning to exports and imports. Gauthier’s attempt to reduce the συνθήκαι in question to more or less vague clauses (‘conditions of access to the port, to markets, exemptions from taxes?’), which relate less to the ‘commerce of *products* than to the possibility for individuals to go about their business without fear of injustice’,⁴⁶ seems in our opinion to be unacceptable, at least in the terms of the analysis proposed by Gauthier for this passage. To start with, the possibility of exporting to – or importing products from – another city (two activities that naturally go together because it is impossible to have the one without the other) has as a necessary precondition the security of the merchants who come there. There is no reason to add anything more about this topic. When discussing Aristotle’s phrase συνθήκαι περὶ τῶν εἰσαγωγίμων (agreements about imports) between the Etruscans and Carthaginians,⁴⁷ Gauthier believes that such clauses come from the non-Greek world because one cannot find any parallels in the Greek world. But if the Etruscans and Carthaginians on one side and the Greeks on the other differed on this point, Aristotle’s argument in this passage (treaties like συνθήκαι, συμβολαί and γραφαί περὶ συμμαχίας are not sufficient to make two partners into one city) would become quite pointless. On the contrary, it is because the Greeks viewed the realities of Etruscan and Carthaginian society regarding life in a community (κοινωνία)

and foreign relations as similar to their own that this example makes sense in Aristotle's argument.⁴⁸ The main reason why he chooses this example rather than one taken from reciprocal relations between Greek states is to show that such treaties cannot transform two communities (κοινωνίαι) into one and the same city because their ethnic differences and geographical distance keep them completely separate. One might add that the antiquity of the treaties between Carthage and the Etruscans,⁴⁹ possibly renewed shortly before Aristotle wrote the *Politics*, might have led him to take this example that everyone knew; no educated Greek of the fourth century could really have been unaware of the longstanding treaty that linked the Etruscans and Carthaginians. The fact that Carthage as a state could be compared in Aristotle's mind to a Greek city emerges from a series of passages in which its constitution is described and often given as an example. At no point is Carthage relegated to the barbarian world; in fact, a reader who did not know that Carthage was a Phoenician settlement⁵⁰ might assume that when Aristotle discusses Carthage, he is talking about a Greek city like any other. It is true that if to gain an idea of the contents of the treaties between Carthage and the Etruscan world one takes into consideration the treaties between Rome and the Phoenician city (it would also be a mistake to think that Aristotle was thinking specifically about Rome, which had not yet achieved an exceptional position), one certainly sees on the one hand that commercial factors are placed on the same footing as strictly political factors, but also on the other hand that there is no explicit discussion of trade in a particular product, but rather in regulating transactions in general.⁵¹ Later when we examine the parallel that exists between Byzantium and Corcyra, we will nevertheless see that concerns about merchants are directly linked to those about products. For the moment let us simply observe that what we know about Carthage's commercial relations in the fifth century BCE corresponds perfectly to the notion of balanced exchange as formulated by Aristotle. Diodorus, probably following Timaeus, attributes the prosperity of Agrigentum in the fifth century BCE to exports of olives and wine to Carthage because trees bearing these products had not yet (οὐπω) been planted in Libya during this period. In this way, 'those living in the territory of Agrigentum acquire a remarkable amount of wealth by carrying on trade with Libya' (οἱ τὴν Ἀκραγαντίνην νεμόμενοι τὸν ἐκ τῆς Λιβυῆς ἀντιφορτιζόμενοι πλοῦτον οὐσίας ἀπίστους τοῖς μεγέθεσιν ἐπέκτηντο).⁵²

As for συνθήκαι περὶ τῶν εἰσαγωγῶν, nothing prevents us from considering the possibility that they could have been included in treaties or 'conventions' of alliance. Gauthier would like to define συνθήκαι strictly as formal treaties.⁵³ He apparently believes that he succeeds in getting Aristotle to contradict himself because Aristotle speaks first about συνθήκαι περὶ τῶν εἰσαγωγῶν (thus the idea of specific agreements about products) and a little later about συνθήκαι that aim at providing reciprocal protections against

injustice for the citizens of the other city: συνθήκαι περὶ τῶν εἰσαγωγίμων would therefore be only a clumsy expression that would in fact cover treaties concerning persons. In fact, far from being irrelevant, the use of the word συνθήκαι by Demosthenes *Against Leptines* 37 to designate the reciprocal advantages granted and received by the Athenians and the king of Bosphorus actually enables us to understand what Aristotle means by συνθήκαι περὶ τῶν εἰσαγωγίμων: these conventions or contracts were actually agreements that were not necessarily bilateral in form.⁵⁴ In concrete terms, these συνθήκαι could take very different forms. They were certainly clauses of treaties, but they could also be unilateral concessions like those of decrees from cities or in royal rescripts granting a particular *dorea*.

It is nevertheless true that most of the treaties or conventions that can be linked to foreign trade concern the rights of persons and not products. Could one still claim that when two states concluded treaties concerning the rights of individuals, the consequences that these treaties might have on the exchange of their commodities were a kind of unintended by-product? Or, on the contrary, could conventions about persons not have been concluded except with the aim of exchanging commodities, all within the framework of an actual policy about imports and exports? Juxtaposing two passages, one about Corcyra, the other about Byzantium, will enable us to answer this question.

According to Thucydides, a little before the skirmishes that led to the conflict between Athens and Corinth in 433, Corinthian ambassadors attacked the Corcyreans in front of the Assembly at Athens with the aim of discouraging the Athenians from giving aid to the Corcyreans. In particular, they accuse the Corcyreans of not respecting the interstate norms of proper conduct:

Because of this the location of their city ensures self-sufficiency and, instead of tying themselves down with treaties, they make themselves judges of the wrongs they do to others. They do not have to go to sea to visit their neighbors but receive foreign ships, which are forced to put into their harbors. In this way, the specious neutrality⁵⁵ that they claim to follow is not caused by their fear of getting involved with wrongs done by others but by their desire to commit them all by themselves, to use violence when they are in a superior position, to take advantage when they can escape detection, and to cast away all scruples when they can gain an advantage.⁵⁶

First of all, let us eliminate a misunderstanding that might arise from this text. Does Thucydides mean that the Corcyreans do nothing but import because foreign merchants regularly come to their ports while Corcyrean merchants hardly ever go to foreign ports? Not at all: on the contrary, the speech of the Corinthian ambassador intends to show how cunning the Corcyreans are.

Being forced to dock in their ports, foreign merchants import foreign products and export commodities produced by the Corcyreans, who thus do not have to send their own merchants to other cities and are therefore not bound by treaties. In particular, we know that the Corcyreans possessed extensive vineyards and that Corcyrean amphoras were exported.⁵⁷

Thus the αὐτάρκεια of the Corcyreans corresponds to the definition of Aristotle: the possibility of importing the goods one lacks, balanced by the export of surplus products from one's own territory. The parallel with Byzantium, a city that we have already mentioned in our discussion of Polybius,⁵⁸ splendidly illustrates this principle. Though written three centuries apart, the comments of Polybius are in perfect accord with those of Thucydides. Like Corcyra, Byzantium is situated next to a strait through which navigators had to pass when following a heavily travelled trade route. Therefore, Polybius tells us, the Byzantines can export their surpluses and import goods that they lack, under optimal conditions, without effort and without risk. It is the foreign merchants who essentially come to them, just as with the Corcyreans. Here one encounters again Aristotle's description of αὐτάρκεια. But the statement of Polybius, just like that of Thucydides, also reveals the exceptional character of the autarky of the Corcyreans and the Byzantines. The Corcyreans are able to make themselves the judges of legal disputes with foreigners arriving in their ports without being in any way bound by treaties of this type because of their unusual location. If their situation is unusual, it is because, conversely, cities should normally create ties through συνθήκαι that regulate the rights of individuals as well as other matters. Therefore, this is exactly what Aristotle tells us in the relevant passage in the *Rhetoric*: συνθήκαι and συμβολαί, which one concludes with whomever it would appear advantageous, are intended to secure exports and imports, by agreements about εξαγωγή and εισαγωγή, the former and the latter being negotiated between cities which should reciprocally derive an advantage from them and avoid any disadvantages for their merchants. The connection between Thucydides and Aristotle's statement in the *Politics*⁵⁹ (which we have already mentioned) concerning the treaty between the Etruscans and Carthaginians – that is, συνθήκαι περὶ τῶν εισαγωγίμων καὶ σύμβολα περὶ τοῦ μὴ ἄδικεῖν καὶ γραφαὶ περὶ συμμαχίας as well as Aristotle's explanation that the sole aim of these agreements is 'that each side not be able to harm the other' – is striking. This is precisely the attitude toward foreigners for which the Corinthian ambassadors criticize the Corcyreans because they have not concluded συνθήκαι with other cities insofar as they can import and export without difficulty. One can see that Aristotle is quite naturally using a formula alluding to the exchange of products (συνθήκαι περὶ τῶν εισαγωγίμων) when he discusses relations between Carthage and the Etruscans, whatever the precise details regarding the text of these agreements (an explicit mention of a particular category of products or only the regulation of exchange).

Finally, let us note that the connection with Thucydides and the absence of συνθήκαι linking the Corcyreans to other cities makes it impossible to accept the suggestion of Gauthier that on the basis of the *Rhetoric* one make a distinction in this passage between συνθήκαι that will be negotiated with more powerful states (political aspect) and συμβολαί that will be negotiated with the aim of making a profit (legal and commercial aspect). Furthermore, doesn't the treaty between Amyntas and the Chalcidian League,⁶⁰ described by the term 'agreement' (συνθήκαι), specifically contain clauses about exports (ἐξαγωγή), with the entire agreement called a συμμαχία?⁶¹ It is not possible to make a distinction between συνθήκαι and συμβολαί.

There remain, however, two points to explain, which we will discuss together: on the one hand, we need to know if in addition to σύμβολα and συμβολαί guaranteeing the rights of persons there also existed agreements specifically concerning products, that is, συνθήκαι that constitute a long-term commitment and affect commercial products; on the other hand, we need, if possible, to show that there are sources indicating that commercial partners sought each other out not only to secure imports but also to export products.

As for the first point, let us first note that the existence of agreements mentioning commercial products is demonstrated by documents such as the treaty between Amyntas and the Chalcidice mentioned above,⁶² which has special clauses about timber, which, it should be emphasized, are found in the context of a more extensive agreement about the exchange of exports and imports. But already in 407/6 the decree passed for Archelaus of Macedonia has a clause concerning wood (according to the most plausible supplement) and oars:⁶³

30–31 [χρύλ]α καὶ κοπέας καὶ
 [ἄλλα ὅσον ἐδέοντο παρ'] αὐτῷ ἀγαθὰ

Naturally the evidence for the relations between Athens and the Bosporan kingdom fits perfectly into the category of συνθήκαι περὶ τῶν εἰσαγωγίμων.⁶⁴ We also know that similar privileges had been granted in a treaty with the Mytilenians.⁶⁵

But one might object in the case of the timber from Macedon and in the case of grain from the Bosphorus that we are dealing with treaties about imports aimed at achieving self-sufficiency for a city. That would naturally ignore the fact that in order for there to be imports there must also be exports: the kingdoms of Macedonia and of the Bosphorus would have reaped large benefits from these. One could nevertheless object that in terms of grain, a necessary commodity for feeding a population, and wood, a strategic material par excellence, it was the Athenians who were the buyers and not their partners.

When it comes to Macedonia during a very long period, and all the more so in the case of the Bosporan kingdom, with exemption from duties and the right of priority in loading cargoes, which the Athenians enjoyed, one might

also wonder what possible advantage could there be for the seller in granting these privileges. It certainly was not a question of an outright gift with no strings attached. During the fifth century BCE, one should not forget that Athens – an imperial power, master of the seas – was at any rate a necessary partner for Macedonia and even for the Bosphorus if these kingdoms wanted to sell all their produce (suffice it to recall the statement of the Old Oligarch cited earlier in the chapter). In the fourth century conditions had changed, and relations among these communities were on a more normal footing in terms of commerce. But weren't the Athenians an ideal commercial partner, with their massive purchases and their regular payments (without a doubt normally paid in kind)?⁶⁶ They enjoyed the privilege of the wholesale buyer: they could buy at the best price, and one guaranteed them the quantities that they wanted. Even in the fourth century BCE, therefore, granting export privileges to a city like Athens attracted the easily understandable interest of the seller, who was assured that he could sell all of his produce on a regular basis without any fear or worry and receive steady payments of silver in return. One can see that from their perspective the kings of the Bosphorus were satisfied with benefits that seem less important to us.

If we turn to the search for an export market, one can first of all mention the famous Megarian decree,⁶⁷ which perfectly illustrates the statement of the Old Oligarch. As Isocrates points out, this is an extreme example because the Megarians had a small amount of fertile land, no revenues from ports and no silver mines.⁶⁸ They made their living from their role as intermediaries for the cities of the Peloponnese, from the export of agricultural food products and from craft production.⁶⁹ The case of cities living in this way, mainly from the products of small agricultural producers of food and from craft production, was certainly not the norm. From this perspective, Megara cannot be compared with the large cities of the Greek world, even if in fact, in the number of small cities of the Aegean even poorer than Megara, one had hardly anything to export except their own workforce. G.E.M. de Ste. Croix still wished to show that because Thucydides reports that the decree of Pericles forbade access for the Megarians to the Athenian *agora*, he meant the *agora* in the political sense.⁷⁰ The decree would have had no economic effect. But this extreme position was quickly refuted.⁷¹ Even if they are wrong, for our topic the arguments of the British historian still give us food for thought when discussing our topic.

For de Ste. Croix, to believe that denying access for Megarians to the Athenian *agora* and to the ports of the empire would have caused economic problems for the Megarians is based on the assumption that the Megarians were the only ones who transported their own produce: nothing would have prevented the Megarians from giving their products to any intermediaries to evade the Athenian blockade. According to de Ste. Croix, the ban imposed

by the Athenians would have been so easy to evade that it would have been impossible for the decree of Pericles to have the implications that we normally attribute to it. He thought that a prohibition during peacetime affecting exports and imports was alien to the mindset of the ancient Greeks.

On the contrary, we have seen that the arguments of Plato and even more those of Aristotle, as well as numerous decrees granting to a given community or to a given individual the privilege of εἰσαγωγή and ἐξαγωγή, clearly show that the control of foreign trade was part and parcel with the sovereignty of the city. This was not “free trade” which was the rule in practice, but, at least potentially, regulated trade, as is revealed by the decrees giving privileges in commercial matters similar to those held by citizens.

But above all, several passages from the *Acharnians* undeniably show that it was possible to regulate imported products according to their origin. It is certainly their *Megarian origin* that the sycophants report in respect to objects as different as small woollen cloaks (a specialty of Megara), cucumbers, hares, piglets, garlic cloves, and salt.⁷² Smuggled in, these products were also seized and sold at auction. Naturally Aristophanes finds a great deal of humor in this: Does a Megarian cucumber differ from an Attic cucumber? How can one tell the difference? Nevertheless, there were good practical ways of determining the origin of imported products.⁷³ Naturally, at the time when the *Acharnians* was performed (425), these were all products from enemy territory, which were prohibited in Attica, Boeotian eels as well as Megarian pork. But the fact that Aristophanes explicitly mentions Pericles’ decree excluding the Megarians and its consequences (the Megarians were soon starving) shows clearly that the exclusion of the Megarians implied ipso facto a ban on Megarian products.

Implicit in the decree of exclusion, which according to Thucydides affected persons (let us not forget that we do not have the actual text of the decree), we must see a clause banning commodities, the objects of trade. Here we can return to the statement of the Old Oligarch: with the Megarians we have an undeniable example of a desperate search for an export market on the part of a smaller city, which cannot aspire to a major role in political power and makes its living day by day from the amount of produce it could export.

A document from Miletus, this time from the Hellenistic period, provides an example of a city searching for an export market and illustrates Aristotle’s statement, which, as we recall, referred to requests to other states that a state needed to make in order to gain an export market. The text is a decree from the city of Miletus for a benefactor, Eirenias, the son of Eirenias⁷⁴:

Ἀντιόχου καὶ παραστησάμενος αὐτὴν εἰς τὸ λαβεῖν παρὰ τοῦ ἀδελφοῦ βασιλέως Ἀντιόχου ἀτέλειαν τῷ δήμῳ πάντων τῶν ἐκ τῆς Μιλησίας εἰσ-
αγομένων γεννημάτων εἰς τὴν βασιλείαν, ὥστε διὰ τῆς γεγεννημένης
συγχωρήσεως ἔνδοξον μὲν τὴν δωρεάν εἰς ἅπαντα τὸν χρόνον γεγονέναι,

πρὸς ἐπαύξησιν δὲ ἀνήκουσαν τῶν τε τῆς πόλεως καὶ τῶν ἐκάστου τῶν ἰδιωτῶν προσόδων . . .

... (sister of King?) Antiochus and that he had brought her to obtain from her brother King Antiochus on behalf of our people an exemption from import taxes for all products from the territory of Miletus exported into his kingdom so that thanks to his concession, the award is famous for all time and will serve to increase the city's revenues as well as those of every individual ...

The decree dates to somewhere between 167 and 160 BCE. The period when the concession was granted certainly falls within the reign of Antiochus IV, who ruled from 175 to 164 BCE. At that time, after the Peace of Apamea, the Seleucid kingdom was pushed back behind the Taurus mountains: exports from Miletus sent to the Seleucid kingdom were therefore long-distance exports by sea and not trade with a neighboring territory. It was the Milesians who took the initiative in the negotiations with Antiochus. It is worth noting that the exemption explicitly affects the products from Milesian territory and not persons.⁷⁵ We should also note the connection explicitly established between the prosperity of the city and that of its citizens in the same way that, following the devastation inflicted on their *chora* during long years as a result of war, the Milesians lamented the simultaneous reduction of public and private revenue.⁷⁶

There was a search for products to import for *trophe* and everything associated with it, and a search also for markets by cities that drew their livelihood from such and such a product. But to complete the agenda set by Aristotle there are two conditions lacking, this time negative: first, the regulation of imports and that of exports (political leaders should know what merchandise to import and export, but they should also know those whose import or export they should prohibit in terms of 'appropriate expenditure' [δσπάνη ἱκανή]).

One often hears it repeated that the absence of concern on the part of the Greeks for foreign commerce is especially apparent in their casual attitude toward their local products (a concept, which by itself would deserve to be seriously rethought when it comes to the Greek city) because they were incapable of providing fiscal measures about foreign products that could threaten their *chora* (territory). The comments that we made earlier about the city's sovereignty concerning trade of course apply fully also to the regulation of imports: the city reserved for itself the right to prohibit them because it could issue import licenses (the privilege of εἰσαγωγῆ). Normally without a doubt in cities that in practice had a vital need for imports of all kinds (one finds, for example, neither iron, nor copper, nor linen, nor wood in the cities of the Cyclades, not to mention grain in an insufficient quantity), one could scarcely be choosy about imported goods. But as soon as a product became undesirable,

its import was banned. Thasos, a city producing wine, prohibited the import of foreign wine into its territory by Thasian ships (the law is unfortunately mutilated, and some of its provisions are lost).⁷⁷ F. Salviat rightly compares a law in effect at Marseille from the thirteenth to the seventeenth century that prohibited the import of wine to the town because this production provided an essential source of revenue for the inhabitants.⁷⁸ To prohibit purely and simply the import of a foreign product (for political or economic reasons) was naturally a much more effective solution than to resort to fiscal measures, even though such fiscal measures are contemplated (it makes no difference that it is meant as a joke) to encourage the export of Lesbian wine to Athens.⁷⁹

As for the regulation of exports, this is widely attested and once again if exportation or (re-exportation) appeared harmful, it was prohibited purely and simply. This is well attested at Athens and in a series of other cities so there is no point in prolonging our discussion.⁸⁰

One can now better understand the meaning of the final clause in the passage from the *Laws* quoted earlier in the chapter. We would translate it thus: ‘As for weapons and all instruments of war, if there is need to import for this purpose a skill, a plant, a metal, a rope, or an animal, let the hipparchs and the generals decide about importing and exporting (εἰσαγωγῆς τε καὶ ἐξαγωγῆς), let the city grant or receive these rights (διδούσης τε ἅμα καὶ δεχομένης τῆς πόλεως), and let the *nomophylakes* introduce laws that are suitable and appropriate for this purpose.’⁸¹ Here again we find the four aspects that we have previously discussed:

1. A right or privilege granted by the city.
 - The right to import: this is the authorization granted for merchants to import a product. There may be a complete prohibition (as in the case of the law of Thasos about wine) or an incentive to import (a proposal, found at least on the stage, to establish favourable fiscal treatment for the import of wine from Lesbos).
 - The right to export: authorization granted (compare Macedonia for wood, the Bosphorus for grain) or denied to export a particular product (prohibitions affecting the export of grain).
2. A right or privilege received by the city.
 - The right to export: the authorization obtained from a foreign state, with a possible preferential treatment, to import goods from this country (for instance, the Athenians receiving the authorization to import wood from Macedonia or grain from the Bosphorus).
 - The right to import: authorization obtained from a foreign state, with a possible preferential treatment, to import to its territory products produced by the city (for instance, cities of the Aegean making a request to have access to the Athenian market in the fifth century BCE; or the Milesians

obtaining *ateleia* for their products in the Seleucid kingdom in the second century BCE).

How can one therefore deny that the cities – or at least a number of cities that looked to the sea and were open to trade – were inevitably interested in foreign trade and not only for the import of foodstuffs? *Trophe* was certainly a necessary concern, but this topic could not by itself have sufficed as a policy when it came to foreign commerce. In fact, to be able to import, it was also necessary to export and to find ways of doing so. The cities also had to search for trading partners who were capable of either supplying the goods they needed or receiving those the city could supply: this was obvious for Aristotle. This observation certainly poses in turn a series of problems, in particular about the relationship between measures taken by the state and the actual activity of merchants. Suffice it to state here that the cities, as states, could not afford to ignore foreign trade.

AUTHOR'S NOTE

This paper was first published in 1987 and then reprinted in *La cité marchande* in 2000. Apart from minimal bibliographical additions, it is this text that is here translated into English (and for this I owe special thanks to Edward Harris). The mid-1980s was a period when the 'New Orthodoxy' was triumphant. Although deliberately focused on one topic only, namely the way in which ancient Greek cities conducted their external economic relations, the article aimed at challenging this orthodoxy on several crucial points. In that sense it represents a starting point for the research on the ancient economy that I then developed over the next three decades.

NOTES

- 1 On this subject, see the overview in Andreau and Étienne 1984: 55–83. This article is intended to cover primarily scholarship in French, but includes works in other languages. The abundant notes that one will find in this article make it unnecessary to provide full documentation for this well-known debate.
- 2 Finley 1973.
- 3 Austin and Vidal-Naquet 1977, translated from the French edition of Austin and Vidal-Naquet 1972.
- 4 Hopkins 1983: xi. W. E. Thompson 1982, one of the few scholars to whom we alluded, suggests calling the theories developed by M. I. Finley 'minimalism.' The title of his essay, 'The Athenian Entrepreneur,' could serve as the title of an entire research program.
- 5 Curiously enough, the summary of the main tenets of the New Orthodoxy given by K. Hopkins (Andreau and Étienne 1984: 63 give a convenient summary) omits many other theses of Finley's important theory, such as, for example, his view about the role of the state toward the economy. Finley presents his ideas about economic analysis in Aristotle in his 'Aristotle and Economic Analysis' in Finley 1984: 263–90, with the bibliography and notes at 291–2, but the topic of foreign commerce is not discussed. On the topic of money, see Picard 1980: 267–76.

- 6 Finley 1973: 161–2.
- 7 Finley 1973: 164.
- 8 Austin and Vidal-Naquet 1977: 113.
- 9 For the *Rhetoric*, see the analyses in the second section of this essay.
- 10 *Pol.* 2.1.7; *Eth. Nic.* 1.7.6.1097b.
- 11 *Pl. Leg.* 12.949e–953e.
- 12 Arist. *Pol.* 7.5.1. Trans. P. Simpson.
- 13 Arist. *Pol.* 7.5.2. Trans. adapted from P. Simpson.
- 14 Arist. *Pol.* 1.3.5: ὅσοι γε αὐτόφυτον ἔχουσιν τὴν ἐργασίαν ... These primitive forms are described at *Pol.* 1.3.4–5.
- 15 Arist. *Pol.* 1.3.13: αὐτὰ γὰρ τὰ χρήσιμα πρὸς αὐτὰ καταλλάττονται ἐπὶ πλέον δ' οὐθέν, οἷον οἶνον πρὸς σῖτον διδόντες καὶ λαμβάνοντες καὶ τῶν ἄλλων τῶν τοιούτων ἕκαστον. ἡ μὲν οὖν τοιαύτη μεταβλητική οὔτε παρὰ φύσιν, οὔτε χρηματιστικῆς ἐστὶν εἶδος οὐδέν, εἰς ἀναπλήρωσιν γὰρ τῆς κατὰ φύσιν αὐταρκείας ἦν' ἐκ μέντοι ταύτης ἐγένετ' ἐκείνη κατὰ λόγον. ξενικωτέρας γὰρ γινομένης τῆς βοηθείας, τῷ εἰσάγεσθαι ὧν ἐνδεεῖς καὶ ἐκπέμπειν ὧν ἐπλεόναζον, ἐξ ἀνάγκης ἡ τοῦ νομίματος ἐπορίσθη χρήσις. Trans. adapted from P. Simpson.
- 16 Cf. earlier in the chapter, Arist. *Pol.* 1.3.8–10.
- 17 On this topic, see Picard 1980.
- 18 Arist. *Pol.* 6.5.2.
- 19 Arist. *Pol.* 7.5.4.
- 20 Arist. *Pol.* 7.5.3.
- 21 Arist. *Pol.* 1.4.2.
- 22 Arist. *Pol.* 7.5.4.
- 23 If Finley had followed Aristotle, he should have admitted the possibility of such treaties between cities, but he doubts that such treaties actually existed (Finley 1973: 161): 'Although traders were beneficiaries [i.e. of bilateral commercial treaties between cities], they were not the only ones. The existing documentation, admittedly thin, is marked by a complete absence of anything we can recognize as commercial clauses, or even references.... Yet concrete examples are hard to find in the sources.' According to Finley, Aristotle calls these commercial treaties 'treaties about imports' (he cites *Pol.* 2.9.7: συνθηκαὶ περὶ τῶν εἰσαγωγίμων). In fact, to the extent that Aristotle considers commercial treaties not from the perspective of one of the trading partners (as is the case in other passages) but from that of both trading partners simultaneously, one sees that to the extent that the exports of one are performed the imports of the other, Finley oversimplifies when he calls these 'treaties about imports' insofar as (as we have seen) foreign trade has for him the sole aim of achieving self-sufficiency, that is, to supply needs. But naturally this does not imply in any way, on the contrary, that one should have no concern for exports because there can be no imports without exports. On this point, see the analysis of Arist. *Eth. Nic.* 5.5.13.1133b that follows.
- 24 ὅσα τ' ἂν μὴ τυγχάνη παρ' αὐτοῖς ὄντα δέξασθαι ταῦτα καὶ τὰ πλεονάζοντα τῶν γιγνομένων ἐκπέμψασθαι τῶν ἀναγκαίων ἐστίν.
- 25 Gauthier and Jolif 1970: II.384.
- 26 Rackham 1934: 286.
- 27 Arist. *Rh.* 2.7.1.1385a: Τίσιν δὲ χάριν ἔχουσι, ἢ ἐπὶ τίσιν, καὶ πῶς αὐτοὶ ἔχοντες ὀρισμένοις τὴν χάριν δῆλον ἔσται.
- 28 *Eth. Nic.* 5.5.14: 'In the interest of future exchange, if one has no need for anything now, currency acts as a kind of guarantor for us that, when there is a need exchange will be possible; for the person bringing it is necessarily in a position to take something away' (trans. C. Rowe). This theoretical argument, which can be applied to exchanges between individuals as well as between cities (Aristotle goes without difficulty from one category to another, as several examples demonstrate), shows how one can avoid the preceding problem by selling to a first partner in order to obtain money and thus having the possibility of buying what one needs from another partner. An anecdote reported by [Arist.] *Oec.* 2.2.16a.1348b shows that in practice people know how to finance imports

by exports: ‘The people of Clazomenae needed money during a famine: they decreed that individuals who owned oil should lend it to the state in return for the payment of interest (their country produced a large amount of olives). After contracting this loan, they loaded their ships and sent them to ports where they obtained grain for the value of the oil’. In reality, one is dealing with a very unusual situation because the state intervenes directly in imports and exports.

- 29 Austin and Vidal-Naquet 1972: 253 note 15.
- 30 Thuc. 1.120.2. We will connect this passage of Thucydides with *Poroi* 1.4, where Xenophon shows the importance of seasonal products for the exports of Attica (on seasonal products, see Gauthier 1976: 47–8). It is interesting that it is specifically the Corinthians who express this opinion: Corinth was the *emporion* of the Peloponnese, and the commercial aspect of the problem posed by Athenian sea power would not have escaped them.
- 31 Isoc. *Paneg.* 4.42.
- 32 Pl. *Leg.* 8.847b–d (we discuss the last part of the passage about import and export licenses later in the chapter).
- 33 Xen. *Hell.* 6.1.11.
- 34 On the timber of Macedonia sent to Athens, see the passage from the Old Oligarch later in the chapter.
- 35 Plb. 4.38.8–9 (see also later in the chapter the conclusions drawn on the basis of this passage).
- 36 Marr and Rhodes 2008.
- 37 [Xen.] *Ath. Pol.* 2.2.11–12.
- 38 Pl. *Resp.* 2.11.369b–370e.
- 39 370e–371a (trans. Emlyn-Jones and Preddy).
- 40 We borrow the definition given by Gauthier 1976: 7–19.
- 41 Arist. *Rh.* 1.4.7–13.1359b–1360a.
- 42 Arist. *Rh.* 1.4.11.1360a.
- 43 Gauthier 1972: 90 note 70.
- 44 The dictionaries give good examples of this. Herodotus (3.157) recounts in detail the story of Zopyrus, who portrayed himself as the victim of the Persians, with his nose and ears cut off and scarred with lashes from the whip, to deceive the Babylonians. In this state, they were inclined to grant him what he requested (ἔτοιμοι ἦσαν τῶν ἐδέετο σφέων). He asked for an army (ἐδέετο δὲ στρατῆς). In Soph. *OT* 1170, one finds the following dialogue: Oed.: ‘Do not ask me.’ Th. ‘For what? Tell me.’ (πράγματος ποίου λέγε).
 45 The plural for δέονται goes naturally with ‘the city’ as a body (i.e., the citizens), which is the subject of the discussion.
- 46 Gauthier 1972: 91–2.
- 47 Arist. *Pol.* 3.5.11.
- 48 Here is a very interesting passage about how these two peoples were considered by the Greeks, that is, on an equal footing.
- 49 From Polybius (3.22–4) we know about treaties concluded between Carthage and Rome, one of the cities that Aristotle could have considered as part of the Etruscan world. The first two treaties go back, respectively, to 508 and 348 BCE.
- 50 See above all *Pol.* 2.8.1–9.
- 51 These treaties are very important for providing evidence about commercial practices in the ancient world. The choice of relations between Carthage and Etruria as an example fits perfectly into the logic of Aristotelian thought (see briefly Bresson 2000: 288–91).
- 52 Diod. Sic. 13.81.4–5. The main idea here is reciprocal exchange. Verbs like ἀντιφορτίζεσθαι (‘take a cargo in return’) or ἀντεξάγειν (‘export in return’) refer specifically to the idea of reciprocal exchange (we do not need to develop this point further here).
- 53 Gauthier 1972: 91–2.
- 54 We cannot, therefore, follow the conclusions of Vélissaropoulos 1980: 180–1 on the necessarily bilateral character of συνθήκαι, but we completely agree with Picard 1980: 273–4

- in his analysis of the meaning of the term συνθήκαι in Aristotle: not only ‘formal treaty between cities’ but more generally ‘act of public law’ emanating from a sovereign power.
- 55 We have already explained this translation of εὐπρεπές ἄσπονδον in Bresson 2000: 29 note 66.
- 56 Thuc. 1.37.3–4: καὶ ἡ πόλις αὐτῶν ἅμα αὐτάρκη θέσιν κειμένη παρέχει αὐτοὺς δικαστὰς ὧν βλάπτουσί τινα μᾶλλον ἢ κατὰ ξυνηθείας γίγνεσθαι, διὰ τὸ ἥκιστα ἐπὶ τοὺς πέλας ἐκπλέοντας μάλιστα τοὺς ἄλλους ἀνάγκη καταίροντας δέχεσθαι. καὶ τοῦτο τὸ εὐπρεπές ἄσπονδον οὐχ ἵνα μὴ ξυναδικῶσιν ἑτέροις προβέβληνται, ἀλλ’ ὅπως κατὰ μόνας ἀδικῶσι καὶ ὅπως ἐν ᾧ μὲν ἄν κρατῶσι βιάζωνται, οὗ δ’ ἄν λάθωσι πλέον ἔχωσιν, ἣν δέ πού τι προσλάβωσιν ἀναισχυντῶσιν.
- 57 Wine-producing estates of the oligarchs at Corcyra: Thuc. 3.70 (surely worked by slaves just as those held by the democrats were: see Thuc. 3.73). Storage of merchandise in the area of the agora of the port where the oligarchs essentially live: Thuc. 3.74. For the export of Corcyrean amphoras (“B amphoras”), especially to Cyrenaica and Euesperides, but also to North Africa in general, the western Mediterranean and the Aegean, see Wilson 2006 and Göransson 2007: 82–114.
- 58 Plb. 4.38.8–9. Cf. above with note 35.
- 59 Arist. *Pol.* 3.5.11 and compare with note 47 in this chapter. As for ἀδικία, it is very striking that one of the rare examples of a commercial letter that we possess, the lead letter from Berezan (Vinogradoff 1971: 74–100; cf. Vélissaropoulos 1980: 38 note 52, for the rich literature that this text has stimulated) begins in this way (lines 1–2): ἀδικεῖται ὑπὸ Ματάσουσ ... This shows that Aristotle or Thucydides do not write in an intellectual language, cut off from reality, but a language in direct contact with the vocabulary of the merchants themselves.
- 60 Tod 1947 no. 111.
- 61 This συμμαχία is naturally connected to the γραφαὶ περὶ συμμαχίας in which we just mentioned in our discussion of Aristotle.
- 62 See note 60 in this chapter.
- 63 Meiggs and Lewis 1969 no. 91 [*IG* i³ 117].
- 64 Cf. Gernet 1909, especially 314–26. On the relations of Athens with the Spartocids one can consult Vélissaropoulos 1980: 179–83, but one should nevertheless stress the formal nature of the δωρεαὶ of the Bosporan kings.
- 65 *IG* XII 2, 3 (Tod 1947 no. 168); cf. Gajdukevič 1971: 99–100.
- 66 Aside from the Black Sea hoard (cf. Kraay and Moorey 1981), in which the appearance of Athenian coins can apparently be explained by political reasons, Athenian coinage is absent from the Black Sea: cf. Schönert-Geiss 1971: 105ff. the same article in *VDI* 116, 1971, pp. 25–35 in Russian (we thank R. Descat and F. Thomas for these references). The notion of reciprocal exchange (see note 52 in this chapter) is of central importance for analyzing exchange between Athens and the Bosporus.
- 67 The decree is known primarily from Thuc. 1.42, 67, 139, 140, 144. On Megara one can now consult the excellent synthesis of Legon 1981: 200–27. Legon shows with excellent arguments that Megara had probably replaced Aegina, which had been under the control of Athens since 456, in the role of an intermediary between the Aegean world, the Propontis and the Black Sea on the one hand and the Peloponnese on the other. By their famous decree the Athenians will have excluded the Megarians from the agora of Attica mainly to block access the Megarians would have to timber from Northern Greece, necessary for the construction of Peloponnesian fleets (in particular that of Corinth). In this case one can better understand why the Peloponnesians will have made the Megarian decree into a *causa belli*. They intervened to have the decree against Megara lifted not as a pretext for declaring war, as one has claimed, or as a simple declaration of solidarity with a Dorian city of the Peloponnesian League, but as a reaction in defense of their own interests. Of course, such an analysis of the facts has nothing to do, however, with a desire to explain the outbreak of the Peloponnesian War through economic causes. On

the other hand, just as it is necessary to do so, his analysis assesses very well the stakes that foreign trade could represent in the struggle between major powers. To return to Megara, Legon shows that the Megarians themselves made a living from their role as intermediaries for the Peloponnese and from the export of their produce, in particular, to the Athenian market. Legon's analysis encounters difficulties with the fact that, according to Thucydides, the decree affected *persons*, while the Megarians lived off the export of their *products*. But one should note on the one hand that we do not have the text of the decree itself and on the other above all that, as we saw from an earlier discussion, the clauses about persons had implications for their products.

- 68 Cf. Isocrates *On the Peace* 8.117 and Legon 1981: 231–32 and 279–81.
- 69 Cf. note 67 in this chapter.
- 70 Cf. de Ste. Croix 1972: 252–3.
- 71 On the view of de Ste. Croix, see Sealey 1975: 89–109; Wick 1977: 74–99; and above all the remarks of Gauthier 1975: 498–503 with the excellent argument that merchants who are always ‘foreigners’ must also be citizens somewhere.
- 72 Ar. *Ach.* 500ff.
- 73 See Bresson 2000: 131–50.
- 74 Herrmann 1965: 71–90, n. 1 (*Nouveau Choix* no. 7) = P. Herrmann *Milet* VI.1 1039. The translation from the *Nouveau choix* is to be modified in regard to one point. See the following note.
- 75 The translation proposed in *Nouveau choix*: ‘...les productions exportées par le territoire de Milet dans son royaume,’ is ambiguous. But the commentary on this passage (*ibid.* note 59), which specifies that it concerns ‘les produits de Milet exportés dans le royaume séleucide,’ is correct.
- 76 *Milet* I.3 (Delphinion), 147 lines 6–7 (τὰς τε κοινὰς καὶ τὰς ἐκάστου προσόδους).
- 77 IG XII. Suppl. 347, II 8–12. The text has been reproduced, translated, and commented on by Salviat 1986: 147, 181 ff. The forbidden area was larger than the territory of Thasos itself. The prohibited area went from the promontory of Athos to cape Pacheia. It appears certain (on this point I do not agree with F. Salviat) that it was not just the area on the mainland but also the territory on the island, which was off limits for a ship's captain to import foreign wine, as the map of Salviat 1986: 184 himself very clearly shows. The reductive interpretation of J. Vélissaropoulos (1980: 191–4: the law would reflect just the desire to restrict Thasian ships to exports of Thasian wine) is less convincing than that of F. Salviat.
- 78 Salviat 1986: 183–4.
- 79 Compare a fragment of the comic poet Alexis fr. 276 (Edmonds) (Athenaeus 1.28e–f), translated and briefly discussed by Salviat 1986, 184–5, which is worth quoting *in extenso*: ‘Bromios is kind. We ought to exempt the Lesbians from taxes when they import wine here. But if anyone is caught exporting even a *kyathos* (small cup) to another city, I put his property on the confiscation list of the gods’ (trans. adapted from Olson). F. Salviat adds this comment on the passage, with which we find ourselves in full agreement: ‘The passage is amusing only if such taxes were normal, and he takes the state's control as something natural.’
- 80 Such prohibitions, in particular for grain, are attested in several cities. For Athens, for example, suffice it to refer to the fundamental study of Gauthier 1981: 5–28. See Gauthier 1979 for how a general in the Chersonese (held by the Lagids) can grant or withhold permission to export wheat that is under his control and gives several examples of similar practices.
- 81 Pl. *Leg.* 8.847d.

FORGING LINKS BETWEEN REGIONS

Trade Policy in Classical Athens

Mark Woolmer

Economists have long recognized that one of the principal explanations for economic growth and development is the expansion of markets – in particular, international or interregional markets. Trade between different communities allows for a more effective allocation of resources, specialization of labor, technical development, and lower prices due to competition. However, these markets do not operate in an institutional vacuum; they require infrastructures in order to function and to provide merchants and their customers with the assurance that all transactions will be fair and that all contracts will be enforced.¹ It was therefore vital that Athens introduced institutions that not only guaranteed the safety of visiting merchants but also reduced transaction costs, thereby increasing the city's attractiveness as a market.² Transaction costs, which, broadly speaking, can be divided into two categories – tangible and intangible – are a crucial factor when deciding whether to buy or sell products in a particular market. *Tangible* transaction costs can crudely be defined as the monetary outlay associated with the exchange of goods or services incurred when overcoming market imperfections. In Classical Athens transaction costs could be incurred on account of formal rules (i.e., laws, decrees, or customs), legal disputes (i.e., litigation or arbitration), sanctions (i.e., punishments or limitations), exchange media (i.e., coins, weights, measures, contracts, or sureties), facilities (i.e., marketplaces, communication, transport, storage or security), and third-party rents (i.e., taxes, duties, or bribes). *Intangible* transaction costs include bargaining costs (the costs required to come to an acceptable

agreement), social costs (external costs to society arising from a particular transaction), and psychic costs (a subset of social costs that specifically represents the costs of added stress or losses to quality of life brought about by a particular transaction).

As a general rule, trade undertaken in markets that have low associated transaction costs tends to be more profitable. Consequently, in market economies, profitability is largely dependent on the cost of transactions – that is, the ex-ante and ex-post costs to individuals of making potentially profitable contracts or bargains.³ The theory underpinning transaction cost economics dictates that if the cost of doing business is low, then the number of transactions increases, thus benefiting society as a whole.⁴ Therefore, if transaction costs are high, fewer exchanges occur, thereby diminishing the wider societal benefits. As Ober recognizes with regard to Athens, all other things being equal, foreign traders were likely to conduct business where transaction costs were relatively low, an economic reality recognized by Xenophon (*Vect.* 2.1; 2.2; 3.3–5).⁵ Consequently, one of the primary objectives of Athenian trade policy during the fifth and fourth centuries BCE was to develop institutional frameworks that would help lower transaction costs and thereby encourage the expansion of markets. In general, these policies can be broadly divided into two categories: those that were non-targeted (i.e., they lowered the transaction costs of every merchant trading in Athens irrespective of ethnicity, social status, or the commodities in which they dealt) and targeted (i.e., those designed to lower the transaction costs of specific merchants or mercantile groups such as grain traders).

When discussing the emergence of Athenian commercial institutions – especially those introduced during the fourth century – previous scholarship has generally adopted Finley's model, which holds that the state was solely motivated by the need to import vital commodities (i.e., grain and timber).⁶ Although recognizing that such policies were intended to increase the attractiveness of Athens as a place to conduct business, many modern scholars have not appreciated the impact these policies had on expanding markets. This criticism holds particularly true when the subject of discussion is the use of honors and privileges as a way of institutionalizing the relationship between state and commercial agent. Believing that Athens profited more from this relationship⁷ (since the state's monetary outlay was minimal compared to the value of the services being provided by its benefactors), scholars have concluded that the main purpose of bestowing honors on merchants was simply to secure vital supplies. Lambert, for instance, proposes that it is only after the Battle of Chaeronea that it is possible to identify the systematic honoring of grain traders, something that he considers to be a new policy.⁸ Engen, following Lambert's lead, suggests that the primary goals of Athenian trade policy were to secure foodstuffs and, on rare occasions, to acquire timber supplies.⁹ Both

consider these new measures to be short-term initiatives designed to overcome specific problems. In contrast, the discussion in this chapter proposes that throughout much of the fifth and fourth centuries BCE many Athenian trade policies – non-targeted and targeted alike – were implemented in order to reduce the transaction costs incurred by merchants. By implementing policies that sought to suppress piracy, standardize weights, measures, and coinage, create legal frameworks in order to facilitate the enforcement of contracts and commercial regulations, and institutionalize the relationship between state and commercial agent through the bestowal of honors and privileges, the Athenians not only guaranteed the safety of visiting merchants; they also reduced transaction costs, thereby making Athenian markets more attractive. As a result, more merchants would be encouraged to conduct their business in Athens, thus facilitating the export of an increased volume of locally produced goods and thereby stimulating economic growth. The first part of this chapter shows that this new approach to Athenian trade policy is necessary for four reasons: first, the Athenians demonstrate a concern for securing commodities other than just grain and timber; second, they were aware that in order to maximize the revenue generated from commercial taxes and duties they needed to stimulate and protect market activities; third, there was a recognized need to export as well as import; and, fourth, there was a concern with ensuring future transactions. This chapter then examines the institutions created by the Athenians to foster closer relationships with the mercantile community. The chapter concludes by suggesting that the interaction between institutions and organizations played a significant role in encouraging and facilitating the expansion of markets and economic growth in fifth- and fourth-century BCE Athens.

NOT JUST GRAIN AND TIMBER

The general acceptance of Finley's view that the Greek *polis* was interested only in securing a supply of imports has led to a preoccupation with grain and timber.¹⁰ Although grain and timber are the most visible commodities in our sources, the import and export of other goods was vital, and thus their importance should not be overlooked. An analysis of the corpus of fifth- and fourth-century BCE honorific inscriptions reveals a small but significant number of merchants being praised for importing commodities other than grain and timber, suggesting that Athenian commercial interests were not as narrow as previously thought. Perhaps the most striking evidence for this is IG II² 141, an honorific inscription praising – albeit mildly – Straton, the king of Sidon in Phoenicia. The rider to the inscription records that all persons who reside and exercise their political rights in Sidon and who travel to Athens on business were exempt from paying the *metoikion* and *eisphora* taxes and from undertaking public liturgies. Effectively this provision freed all merchants who were

part of the Sidonian ‘political class’ from the financial obligations normally imposed on foreigners of *metic* or *isoteles* status. Although honoring Straton for his political services, the combination of an incipient political association with a trade agreement demonstrates that the Athenians recognized the importance of their economic relationship with Sidon and the need to honor its merchants as well as its king. As the Sidonians were not known for exporting large quantities of grain (see van Alfen, [Chapter 12](#) in this volume), this decree should not be seen as part of a wider strategy aimed simply at procuring Finley’s ‘necessary’ commodities. Similarly, the honoring of Apollonides, son of Demetrios of Sidon, is likely to have been for general commercial services rather than for the specific import of grain as the exact reason for his honoring is left unstated.¹¹ It is also doubtful that Lycon of Achaea received his honors for bringing grain to Athens (*IG* I³ 174). Although the extant portions of the decree do not record the nature or type of service being rewarded, his ownership of a vessel and the provision permitting him to sail and trade from Achaea to all places controlled by the Athenians and their garrisons (except the Gulf of Corinth) strongly indicate that he was a professional trader.¹² Because the decree specifically records that Lycon operates from Achaea rather than one of the key grain-producing regions such as the Chersonnese, coupled with the fact that there is no expectation that he will transport goods directly to Athens, it is reasonable to conclude that the services being recognized were not related to the grain trade. Another interesting case that suggests merchants could be honored for importing commodities other than grain or timber is that of Chaerephilus and his sons who were bestowed grants of citizenship ca. 337–330 BCE.¹³ Athenaeus (3.119f–120a), quoting the comic poet Alexis, records that Chaerephilus was granted Athenian citizenship for importing large quantities of salted fish. Despite Alexis’ explicit statement and the abundant evidence for the import of salted fish (see Carusi, [Chapter 15](#) in this volume), scholars have been reluctant to accept his testimony.¹⁴ However, if it is accepted that Athenian trade policy was also intended to encourage market exchange more generally, there is no reason to doubt Alexis’ explanation for the grant of citizenship. A contemporary honorific inscription dating to ca. 337 (*IG* II² 283) also shows that the import of fish was considered important enough to be highlighted as a service to the state. Although the recipient is primarily honored for selling grain cheaply during a time of shortage, he is also commended for importing fish at a reduced price.¹⁵ Further evidence that Athenian trade policy was not limited to securing grain and timber is contained in *IG* II² 1128 – a decree recording Athens’ decision to send envoys to Ceos in order to persuade the Cean cities to regulate more carefully the trade in ruddle.¹⁶ In essence, the inscription records a political agreement whereby Athens gained a monopoly over the trade in Cean ruddle. Although ruddle was used to impart red color to a variety of objects – such as pottery, the stones used in public

buildings, the rope used to bring the men from the agora to the Pnyx for the assembly, and the hulls of triremes – it is unclear why the Athenians were so keen to regulate the trade in this particular commodity. Although the motivation for these regulations is uncertain, what the inscription does reveal is that Athenian policy makers were knowledgeable about other commodities and were willing to use the mechanisms of state to secure them. The final indication that the Athenians were concerned with a range of commodities is their concerted and sustained efforts to lower the transaction costs incurred by all merchants irrespective of the goods in which they dealt (see discussion later in the chapter for further details). If, as Lambert and Engen posit, Athens was simply concerned with securing shipments of grain and timber, it could have achieved this objective simply by offering tax breaks or favorable commercial terms to men dealing in these commodities. However, a full analysis of the literary and epigraphic evidence indicates that Athenian trade policy was considerably more inclusive than previously believed.

MARKETS AS A SOURCE OF REVENUE

Athenian awareness that commercial taxes and duties were lucrative reveals that the introduction of commercial institutions during the Classical period was aimed at more than just securing a supply of imports. Prior to the outbreak of the Peloponnesian War, the standard Athenian tax on trade had been levied at 1 percent *ad valorem*, a rate that remained unchanged until 413 BCE when Athens implemented an emergency 5 percent tax on all maritime trade conducted in the harbors of the empire. At the beginning of the fourth century, the Athenians introduced the *pentekoste* (one-fiftieth) tax, an import/export duty levied at 2 percent *ad valorem*, which remained in use until the Roman period. The substantial amount of revenue that could be generated from these types of duties and taxes was highlighted in c. 402/1 BCE when Agyrrhius, the proposer of the subsequent Grain Tax Law in 374/3 BCE, leased the collection of the *pentekoste* for 30 talents. In 399 BCE, Andocides secured the *pentekoste* for 36 talents, indicating an expected turnover of commodities valuing in excess of 2,000 talents: this is an exceptional figure at a time when Athens was still recovering from the effects of the Peloponnesian War.¹⁷ During the fourth century BCE, Amemiya calculates that the 2 percent tax on grain would have raised eight to sixteen talents a year, a figure that is likely to have been dwarfed by the annual revenues from harbor taxes and import/export duties.¹⁸ There were other types of commercial charges that could also prove lucrative. In 410 BCE, while still in control of the Hellespont, Alcibiades is said to have introduced a 10 percent tax on all merchant ships that passed through the Bosphorus strait.¹⁹ Although this tax was abandoned after Aegospotami, it was reintroduced by Thrasybulus in 389 before being finally abolished by the Peace

of Antalcidas in 386 BCE.²⁰ It is impossible to determine how much revenue was generated by this tax, but the fact that it was set at an exceptionally high rate of 10 percent suggests that it was implemented to provide a much-needed boost to Athenian state finances. Significantly, the motivation underpinning Athenian interest in commercial taxes/duties appears to have been purely fiscal as there is no evidence that the Greeks thought in terms of protective customs barriers.²¹ Taken as a whole, this evidence supports the greater emphasis that Hasebroek, Gernet, and Burke have placed on the acquisition of revenues as a motivation for Athenian trade policies.²² Although Gernet goes too far in suggesting that the acquisition of revenue was the Athenians' chief interest in trade until the late fourth century, when shortages of grain forced them to prioritize their food supply, he is nevertheless correct to draw attention to the fact that they were not ignorant of financial considerations when making policy decisions. Burke, citing two passages from the *Poroi* that highlight the substantial revenues generated by interregional trade, concludes that the Athenians were well aware of the financial implications of their commercial policies (Xen. *Vect.* 2.1–7; 3.3–5). This conclusion is strengthened by two passages from the orations of Demosthenes and Isocrates. In the first, Demosthenes emphasizes the importance of commercial taxes and duties when he pleads with his fellow citizens not to rescind the honors and privileges bestowed to the Bosphoran king Leucon on the grounds that they induce further benefactions, which in turn generates a net gain both in revenues and imported goods (Dem. 20.30–40), whilst in the second, Isocrates (8.20–21) draws an explicit connection between Athenian economic prosperity (in terms of state revenues) and commercial taxes by documenting the adverse effect that war has on public finances – in particular stressing the harm caused by the reluctance of merchants to conduct business in war zones. Although it is clear that Athenian interest in commercial taxes and duties was primarily motivated by a desire to increase public revenue, this objective could not be achieved simply by increasing the amount being charged. As has already been noted, foreign traders were, all other things being equal, likely to conduct their business where transaction costs were relatively low. Although in the short term a significant increase in commercial taxes and duties would generate a larger income, in the long term foreign merchants would be deterred from conducting business in Athens, thus ultimately reducing the amount of revenue generated. Recognizing that, aside from periods of crisis or emergency, the introduction of higher commercial taxes and duties was counterproductive, the Athenians established a system of taxation that relied on a high volume of transactions occurring in their markets. Consequently, instead of burdening a smaller number of merchants with higher levels of taxes and duties, the Athenian system charged moderate fees on an increased number of transactions. The success of such a system demanded that the Athenians were mindful of the impact that state policy had

on the quantity of transactions being conducted in their markets. With regard to commercial taxes and duties, therefore, the Athenian concern with increasing public revenues was intrinsically linked to, and indeed dependent on, continued market activities. It is therefore reasonable to conclude that both were considered when Athenian trade policy was being decided.

CONCERN WITH EXPORTS AS WELL AS IMPORTS

Now that we have shown that a desire to stimulate market activity was a key factor prompting Athens to institutionalize its relationships with foreign merchants, it is important to discuss a related issue: exports. The belief that Athenian trade policy was primarily focused on securing imports has resulted in scholars generally overlooking the importance of exports to the Athenian economy. Bresson ([Chapter 2](#) in this volume) redresses this balance through an analysis of Aristotle's views of foreign commerce. Bresson concludes: 'In order to be able to import, it was also necessary to export and find the adequate resources to do so. Furthermore, the cities had to search for the appropriate partners so as to provide and receive the commodities: this was self-evident for Aristotle'. Although Aristotle never explicitly states that exports are required to finance imports, Bresson shows that this belief underpinned much of his theorising on interregional exchange (e.g., Arist. *Eth. Nic.* 5.5.14). Isocrates (4.42) also demonstrates awareness of the link between deficit and surplus when he states: 'Moreover, each city does not own a territory that fully satisfies its needs, but at certain times is in some way lacking, at other times producing things other than they truly need'. Similarly, Plato's Socrates, aware of the symbiotic relationship between imports and exports, and recognizing that a state cannot survive without foreign trade, posits that the only viable way of financing imports is by exporting commodities of an equivalent value (Pl. *Resp.* 2.11. 369b–370e). Significantly, Amemiya has calculated that during an average year in the fourth century BCE, the value of Athenian imports was roughly equivalent to that of its exports – approximately 2,760 talents.²³ Although, as Amemiya himself recognizes, these figures are highly speculative, they nevertheless support the idea that imports were intrinsically linked to exports. Thus, a state that was concerned with securing imports was, by necessity, also required to have a concern for exports because the latter paid for the former. Bresson's analysis of the honors and privileges bestowed to merchants (in particular *ateleia* and priority loading/unloading) emphasizes this point. Bresson shows that many of the honors bestowed by Athens created favorable conditions for the import *and* export of goods, indicating that the Athenians considered both to be important. Although none of the extant honorific inscriptions explicitly mention the export of commodities, Xenophon (Xen. *Vect.* 3.2) suggests that the majority of merchants who imported goods to Athens would

purchase a return cargo before heading home; if Xenophon's assessment is correct, and there is little reason to doubt it, the merchants responsible for importing commodities also exported Athenian surplus, making them doubly important.²⁴ Thus, it was the desire to facilitate both imports *and* exports that prompted the Athenians to foster closer relationships with the mercantile community and to introduce institutions that both encouraged and regulated commercial activities.

THE CREATION OF LONG-TERM RELATIONSHIPS

The bestowal of honors and privileges in recognition of commercial services is another indication that the Athenians were mindful of the relationship between market activity and economic growth. Even if, as Lambert and Engen argue, these honors were bestowed solely at times of economic crisis – a conclusion that is far from certain – the Athenian honorific tradition sought to create relationships that would last beyond the immediate predicament. Instead, these honors reveal a desire to create a more long-lasting relationship between state and commercial agent. For instance, Low concludes that the Athenian declaration of power in these decrees formed a central part of the benefits that the Athenians are able to offer – that the honorand would receive certain tax breaks, or, more usually, protection from harm and would be entitled to these not just in Athens but in a whole range of cities.²⁵ By specifying their power in this way the Athenians emphasized the extent of their influence. Furthermore, through the assertion that their power extended beyond the boundaries of their own territory, the Athenians were able to promise benefits that very few other *poleis* could match. These benefits reduced mercantile transaction costs, thus giving the Athenians an unrivalled advantage when it came to attracting merchants to their markets. Low interprets these inscriptions as a demonstration of the Athenians' ability to outbid their rivals in a 'battle of competitive generosity'. This is an important conclusion, and Low is correct to emphasize that the Athenians did not merely grant honors and privileges to those who, with no prompting, had conducted favorable business with Athens. Rather, the Athenians granted honors and privileges to their benefactors to encourage them (and others) to perform valuable services on the state's behalf. Merchants who received honors from Athens found that their social standing within Attica greatly improved, thus further increasing the attractiveness of Athenian markets as places in which to conduct business. The Athenian honorific tradition therefore encouraged the creation of long-lasting relationships that helped foster market activity, a fact recognized by Demosthenes (20.29–41). Perhaps the strongest evidence that the honorific tradition was intended to create enduring relationships is the granting of honors and privileges to the sons and descendants of the original recipient. In eight of the

thirty-two inscriptions honoring men for their commercial services during the fifth and fourth centuries BCE, it is recorded that relatives of the honorand were accorded the same honors and privileges as the recipient.²⁶ *IG II² 12*, for instance, explicitly states that the grant of *asylia* bestowed on Pythophanes and his property also extended to the other members of his family. Similarly, *IG II² 360* (= *IG II³ 367*) records that Heracleides of Salamis and his descendants will be *proxenoi* of the people of Athens and will have *enktesis* of both land and house according to the law, and they shall serve on campaign and pay *eisphora* as if full citizens. With the majority of sons adopting their father's profession (more often than not taking over the family business), the extension of honors to include the descendants of a professional merchant should be interpreted as a calculated move motivated by a desire to establish lasting relationships and to secure future services and benefactions.²⁷ Although it is impossible to ascertain the extent to which this policy was successful, the case of Chaerephilus and his sons indicates that it could be. Although Chaerephilus' sons were awarded citizenship because of their father's commercial services, at least one of them, Pheidippus, is believed to have carried on the family business (Alexis fr. 6; fr. 221 K-A). Furthermore, after Chaerephilus' death, his sons continued to be benefactors of Athens, undertaking numerous liturgies throughout the 320s and thereby demonstrating how lucrative these relationships could be.²⁸

THE SUPPRESSION OF PIRACY

The Athenians were clearly aware of the link between lower mercantile transaction costs and an increase in the volume of market activities. More significantly, they also understood that the lowering of transaction costs required intervention from the state – an illustrative example of which is the Athenian efforts to limit incidences of piracy. This activity had the potential to cause considerable disruption to maritime trade as the plundering of shipping significantly increased transaction costs: in turn, these higher costs dissuaded merchants from conducting business in Athens, resulting in reduced levels of market activity and thus curtailing the growth and expansion of Athenian markets.²⁹ Accordingly, the suppression – or, if possible, eradication – of piracy was a major concern for Athens during the fifth and fourth centuries BCE. The Athenians employed a range of strategies to counter the problem, which included sporadic campaigns designed to 'clear the sea of pirates', the creation of alliances and pacts against piracy, the construction of naval outposts, and the organization of naval convoys to protect merchant vessels sailing to Athens. Despite the effectiveness of naval campaigns as a method for suppressing piracy (e.g., the expedition in 334/3 BCE commanded by the general Diotimus, *IG II² 1623*, lines 276–85), their huge expense and impracticality meant they were used sparingly. Even a campaign designed to identify and punish select groups

of pirates would require enormous military effort and huge public expense if it were to be successful. Consequently, the Athenians sought to curtail piracy using other, less expensive measures. One such measure was the creation of alliances that placed responsibility for reducing piratical activity on the allied states. Two treaties dating to the period between 427 and 424 BCE (between Athens and Mytilene, and Athens and Halieis) bear witness to this policy: both demanded that Athens' allies should make their harbors available to all Athenian shipping while closing them to known pirates (*IG I³ 67*; *IG I³ 75*). In addition, each treaty contained a clause forbidding the signatory state from sanctioning any type of piratical activity (including raiding during times of war). These treaties represent an attempt to reduce piracy through less expensive political endeavors rather than military campaigning or colonization. By reducing the number of safe anchorages available to pirates, the Athenians hoped to make it more difficult for them to operate. Further evidence for this strategy can be found in Demosthenes' *Against Theocrines* (Dem. 58.56), which refers to a decree of Moerocles: according to the terms of this agreement, pirates were to be refused access to all the harbors and ports of Melos.³⁰ However, the Melians were either unable or unwilling to enforce these terms, resulting in a fine of ten talents. The passage seems to suggest that the Athenians encouraged, or perhaps forced, their allies to accept a mutual pact against piracy: according to the terms of this pact, each state would be held accountable for suppressing piracy within its own sphere of influence. If a state were unable to achieve this objective, they could appeal for Athenian assistance or face heavy fines.

The Athenians also utilized military escorts to ensure that *emporoi* and *naukleroi* arrived safely at the Piraeus.³¹ This practice began during the Peloponnesian War but was reintroduced at various times during the fourth century.³² One route that was particularly notorious for pirates was that from Phoenicia via Phaselis to Athens. Although these convoys primarily operated along major grain supply routes, they were not exclusive to traders in foodstuffs, and thus merchants transporting other commodities could take advantage. It was even possible for vessels traveling to destinations other than Athens to join these convoys.³³ Detailed evidence for the operation of these convoys can be found in Demosthenes' oration *Against Polycles*, in which Apollodorus (son of Pasion) records that while serving as a trierarch, his main duty was to provide a military escort for trading vessels traveling from the Propontis in the northern Aegean to Athens.³⁴ This account is supported by *IG II² 1623*, lines 276–85 (ca. 336/5 BCE), which records that the *strategos* Diotimus was sent out to the Pontus region to provide protection against piratical attacks on merchant shipping.³⁵ The importance of keeping watch over Athenian interests around the Hellespont was stressed on many occasions. For instance, in Demosthenes' oration *Against Theocrines*, Epichares publicly accuses several Athenian generals for failing in this duty: '[T]he generals and those in command of your triremes,

and not you (the *demos*), are responsible for mishaps which occur during a voyage' (Dem. 58.53–54). In order to finance these activities the Athenians sought to raise money from states with mercantile interests: Demosthenes (8.24–25) describes a symbiotic relationship in which the Athenians provided *phylake* (protection) for merchants with their navy, and the states whose citizens benefited footed the bill.³⁶ If, in the long-term, these convoys failed to provide adequate protection, a more permanent solution was to either colonize the region or establish a series of naval outposts. The most dramatic example of the Athenians implementing such a policy was their establishment of a colony in the Adriatic in c. 325 BCE.³⁷ The inscription recording the decision to found the colony clearly states that its primary purpose was to secure one of the most important Athenian grain routes and, by means of the newly constructed naval base, to protect all commercial shipping from the threat of Etruscan pirates.³⁸ The Athenian policy of using naval outposts and colonies as a deterrent against continued acts of piracy (either state-sponsored or carried out by unaffiliated operators) can be traced back to the fifth century BCE.³⁹ The inscription IG I³ 61 (dating to around to the 430s or 420s) refers to a group of officials called the Guardians of the Hellespont, which operated out of one such outpost and whose primary duty was to regulate and tax trade in the Hellespont (lines 39–41). Considered as a whole, the evidence documenting Athenian efforts to curtail piracy reveals a genuine concern with guaranteeing the safety of merchants. However, this was not a purely altruistic policy: by protecting mercantile shipping, the Athenians were able to reduce the transaction costs incurred when trading in Athens, thereby ensuring that their markets were competitive and thus attractive to foreign merchants.

Asyilia

Linked to Athenian efforts to reduce mercantile transaction costs via the suppression of piracy was the bestowal of *asyilia*. In essence *asyilia* (inviolability) was a guarantee of protection for the honorand and his property against forcible seizure.⁴⁰ *Syla* and its cognates are broad terms, which are generally used to denote the seizure of person or property in an effort to remedy an injustice.⁴¹ Such seizures could constitute direct reprisals (i.e., an aggrieved party seizing the property of those who had caused offence or someone closely connected to him) or indirect (i.e., when the aggrieved party was unable to gain satisfaction against the offender, his property, or someone connected to him and thus seized a fellow citizen, or the property belonging to a fellow citizen, of the offender). Moreover, these seizures could be endorsed at state level: for instance, a *polis* could sanction the seizure of any citizen or property belonging to a rival state. A grant of *asyilia* can therefore be understood as denoting that certain individuals – or, on occasion, certain

states (e.g., the agreement made between Oianthea and Chaleion, Tod, *GHI I*, no. 34) – were exempt from acts of ‘legitimate reprisal’. A number of *asylia* proclamations also record the penalties for anyone not respecting the rights of a protected foreigner: these included both civil punishment and criminal prosecution.⁴² The Athenians can be identified bestowing this privilege to merchant honorands on five occasions during the late fifth and fourth centuries BCE (however, many of the extant honorific inscriptions are too badly preserved to ascertain whether they included grants of *asylia*).⁴³ Among the grants of *asylia* to individuals is one bestowed to Pythophanes in recognition of his commercial services: although the magnitude of these services is unknown, the decree was renewed in 399/8 BCE, which suggests that they were considerable.⁴⁴ The inscription records that Pythophanes, his family, and possessions (including his ship) were inviolate both in Athens and in any place the Athenians ruled. Evidence that this was no idle promise can be identified in the closing lines of the inscription, which explicitly dictate that it was the responsibility of the council and serving generals to ensure that this promise was kept. *IG II*² 360 and *IG I*³ 174, although not explicitly granting, both demonstrate a concern with ensuring that the recipient was able to travel and conduct his business unhindered. *IG I*³ 174 grants the honorand – Lycon of Achaea – the right to carry his goods anywhere under Athenian control (aside from the Gulf of Corinth), while *IG II*² 360 records the Athenians’ decision to dispatch an envoy to the tyrant of Heraclea, Dionysius, to request that he return the sails confiscated from the *emporos* Heracleides and to obtain a promise that the Heracleotes would desist from preventing merchants from sailing to Athens.⁴⁵ This inscription, although not making an explicit grant of *asylia*, provides an insight into what such a privilege might mean for the recipient. Professional traders who were awarded grants of *asylia* in recognition of their commercial service gained a number of practical benefits: most significantly, they lowered the tangible and intangible transaction costs associated with maritime trading. For example, *asylia* greatly diminished the risk of losing one’s cargo and ship to acts of *syla* while simultaneously providing legal recourse if a seizure did occur: this reduced risk might also have enabled recipients of *asylia* to negotiate lower interest rates on maritime loans. By using grants of *asylia* to institutionalize the relationship between state and commercial agent, the Athenians were able to lower both types of transaction costs, thus greatly increasing the attractiveness of Athens as a place to conduct business.

Proxenia

Another institution the Athenians used to foster closer links with the mercantile community was *proxenia*. The title *proxenos*, which derived from the prefix

pro- meaning ‘on behalf of’ or ‘instead of’ and the word *xenos* translated as ‘guest-friend’ or sometimes more generally ‘foreigner,’ was awarded to those men who had provided important services to the state or had displayed continuing goodwill toward the people of Athens. *Proxenia*, which had its origins in the *xenia* relationships of the Archaic period, was essentially an institutionalized type of guest-friendship. Athens first honored merchants with grants of *proxenia* in the aftermath of the Peloponnesian War: during the 414–360 BCE period, the title was awarded on five occasions to commend commercial services, with four of these grants predating 407. In the period from 355/4 to 307/6 BCE, which encompasses the loss of the Second Athenian Confederacy and the defeat at the Battle of Chaeronea in 338, *proxenia* was awarded to six recipients.⁴⁶ In comparison, there are only twelve extant decrees granting *proxenia* to reward political or military service during the same period (i.e., 355–335 BCE). Almost without exception, the grantor of a proxeny decree was a city or other polity, and the recipient was always a foreigner, usually residing elsewhere. As in the *xenia* relationships of the Archaic period, the expectation was that each party would continue to benefit the other. Honorands who received the title *proxenos* were thus expected to further the interests of the granting community in their native cities. This is a point emphasized by Aeschines (3.138) who states: ‘*Proxenoí* are those who in their own fatherlands look after [the affairs of] other cities’. A *proxenos* was, therefore, a respected foreigner to whom a state entrusted the protection of its citizens and various diplomatic functions within the recipient’s homeland.⁴⁷ However, the honorific decrees are largely silent about the exact tasks of a *proxenos* resulting in some degree of scholarly disagreement.⁴⁸ Despite the differences of opinion, the following has generally been accepted: citizens of the state which had bestowed *proxenia* could formally request hospitality, including meals and lodgings, from a *proxenos*⁴⁹; *proxenoí* were expected to entertain diplomats and emissaries from their adopted city and formally introduce them to the authorities of their resident town⁵⁰; in the case of a legal dispute arising between a citizen and a visitor who was under the protection of a *proxenos*, the *proxenos* was obliged to represent the visitor; and *proxenoí* could function as mediators in disputes between the two cities to which they owed allegiance.⁵¹ However, an issue on which there is little scholarly consensus is the extent to which *proxenoí* were actively involved in interregional commerce. Hasebroek, for instance, believed that the Greek states tasked *proxenoí* with monitoring all commercial activities involving their citizens that were conducted in the home state of the *proxenos*. Ziebarth also accepted that *proxenoí* were intimately involved in interregional commerce, although he posited that their duties were solely focused on securing grain supplies.⁵² More recently Burke, building on the work of Rostovtzeff, concluded that during the Classical period *proxenoí* helped create a network of interstate relations that facilitated commerce.⁵³ In contrast,

Marek concluded that the bestowal of *proxenia* was *not* motivated by commercial interests and that *proxenoi* performed few, if any, commercial functions. Yet Marek did concede that grants of *proxenia* were occasionally conferred in order to encourage or reward generosity by foreign grain traders.⁵⁴ Although the evidence does not permit any certainty when determining the extent to which *proxenoi* were actively involved in the brokering of trade agreements or with securing shipments on behalf of Athens, their role did, nevertheless, help facilitate interregional commerce. Even if *proxenoi* simply offered support and legal assistance to visiting Athenian merchants, these services were invaluable. Moreover, Athens also benefited from these relationships as the advantages provided by a grant of *proxenia* encouraged the recipients to conduct business in Athens. The title *proxenos* did not confer tangible benefits per se, but it did increase the recipient's honor and status and was thus highly desirable. While not bestowing the rights of full citizenship, the title served as proof of the reciprocal relationship between the recipient and Athens. As Engen observes, this relationship was built on the implicit understanding that the honorand would be treated as something more than the average foreigner to whom the city had no obligation. This improvement in status reduced both the tangible and intangible transaction costs incurred when trading abroad and was thus a powerful incentive for *proxenoi* with a mercantile background to continue dealing favorably with Athens. Moreover, as with the grants of *asylia* discussed earlier in the chapter, the bestowal of *proxenia* was evidence of the recipient's honorable dealing and trustworthiness, which might have enabled them to negotiate lower interest rates on maritime loans or to obtain more favorable terms of trade.

HONORS AND REWARDS: ATELEIA, ENKTESIS, AND GOLD CROWNS

In addition to *asylia* and *proxenia*, the Athenians bestowed a number of others honors and rewards that reduced the transaction costs incurred by specific merchants or groups of merchants. Three of the most revealing in terms of Athenian economic and trade policy were *ateleia*, *enktesis*, and gold crowns. The award of each is indicative of a desire to foster closer links with the mercantile community and, by so doing, increase the volume of trade in Athenian markets: they were not, as many have suggested, awarded in an effort to generate public revenue or simply to secure supplies of grain and timber. Of the three, the awarding of *ateleia* was perhaps the most significant as it not only encouraged a greater number of market transactions but also reduced the revenue obtained from commercial taxes/duties.⁵⁵ Because of this, grants of *ateleia* in recognition of commercial services were rare and only bestowed to those who had performed exceptional services or had the potential to do so in the future. Consequently, prior to 410 BCE, *ateleia* was only granted in recognition

of political or military services: it is not until an unknown point between 410 and 336 BCE that the Athenians began to bestow *ateleia* to professional merchants. Grants of *ateleia* greatly increased the social standing of the recipient in Attica as they essentially placed the recipients in the same company as the descendants of Harmodius and Aristogeiton (and other exceptionally important military and political figures). However, although *ateleia* had considerable honorary value to the recipient, Oliver rightly argues that the commercial benefits should not be downplayed.⁵⁶ The award of *ateleia* for commercial services had one of two tangible benefits for the recipient: first, the honorand could be made exempt from all obligations (excluding the trierarchy) and the payment of taxes (apart from the *eisphora*) – *ateleia panton*; or, secondly, the recipient could be freed from the burden of specific taxes such as the *metoikion* – *ateleia metoikiou* – or the payment of the one-fiftieth tax.⁵⁷ As well as bestowing *ateleia* on individuals, states could also make blanket grants to all members of a particular group or community. Rubinstein suggests that blanket grants were used to attract specific groups to the state who had bestowed the privilege, a measure that could be especially effective if the services of the target group were in high demand. An honorific inscription dating to the 330s BCE illustrates how such grants could be used to entice commerce to the Piraeus.⁵⁸ The decree specifies that the recipients, a group of unnamed Achaean merchants, were exempt from ‘[all things],’ which, in all likelihood, included import and export taxes.⁵⁹ Similarly, in 364 BCE the Athenians conferred this privilege to all Sidonian traders who resided and exercised their political rights in Sidon and who traveled to Athens on business (see discussion earlier in the chapter).⁶⁰ As there is no evidence to suggest that the Achaeans or the Sidonians were heavily involved in the grain trade, there is no reason to conclude (*pace* Henry, Lambert, and Engen) that these awards were made in an effort to procure grain supplies. Rather, they should be seen as part of a wider strategy aimed at increasing the volume of transactions occurring in Athenian markets, a policy that not only ensured that a variety of commodities reached the Piraeus but also encouraged the expansion of markets.

Likewise, *enktesis* (the right to acquire land in Attica) and the bestowal of gold crowns were both awarded to noncitizen merchants irrespective of the commodities in which they dealt. The Athenians granted *enktesis* on six occasions in recognition of commercial services, bestowing the honor on both Greek and non-Greek recipients.⁶¹ Prior to the mid-fourth century BCE, *enktesis* had only been bestowed in recognition of military or political accomplishments: however, post 350 BCE, it began to be awarded in recognition of commercial services.⁶² This shift in policy is most reasonably interpreted as a response to the changed political and economic circumstances following the loss of the Second Athenian Confederacy. According to Xenophon (*Vect.* 2.6), grants of *enktesis* could be used as an incentive to encourage foreign merchants

to relocate their businesses to Athens, something that would have been particularly appreciated during the last half of the fourth century. Not only could any land purchased be used for the construction of warehouses, thereby reducing transaction costs; it could also be used as an alternative form of security when acquiring loans. Although grants of *enktesis* theoretically reduced the tangible transaction costs incurred when trading in Athens, the main benefit was its honorific value and the accompanying reduction in intangible costs. Gold crowns, perhaps the single most expensive honor granted to merchants, also offered tangible and intangible benefits.⁶³ Aeschines (3.46–47) records that recipients of gold crowns that had been proclaimed in the assembly were not required to dedicate them and could do with them as they pleased. Thus, they could be melted down and converted to coinage or could be retained and displayed as a visual record of the esteem in which the honorand was held. From 350 BCE, the value of an honorific gold crown was usually (but not always) specified in the decree and was either 500 or 1,000 drachmas, depending on the scale of the service that had been performed. The commissioning of a gold crown was a significant expenditure for Athens: during the second half of the fourth century BCE, a single crown constituted between 0.01 percent and 0.30 percent of the state's overall revenue.⁶⁴ Furthermore, if we accept the assessment that the average construction costs of a trireme amounted to approximately 6,000 drachmas, then every gold crown represented around one-sixth of a warship.⁶⁵ This demonstrates two things: first, that the Athenians considered the honorific tradition an important institution for encouraging merchants and their commodities to Athens; and second, that the increased volume of traffic encouraged by these honors, and the accompanying expansion of markets, would offset any costs incurred.

LEGAL PROTECTION AND SUPRANATIONALITY

When deliberating about foreign and domestic policy, the Athenians were well aware of the importance of institutionalizing the relationship between state and merchant in order to encourage and facilitate trade. For instance, Aristotle, in his discussion of the five themes of political discourse essential for the political survival of a city, identifies what a city must do to achieve this goal. Using food supply as a case study, he states that a city should 'make agreements and commercial treaties with the countries concerned'. It was therefore necessary, according to Aristotle (*Rh.* 1360a), to consider two types of relationships: those with stronger states and those with states that were useful for trade. Moreover, Aristotle's work highlights the importance of coordinating foreign and domestic policy if a state were to be successful at increasing the volume of transactions taking place within its markets. With regard to foreign policy, Aristotle advocates the creation of agreements and treaties with important

trade partners in order to protect the interests of their respective mercantile communities. In tandem with this, domestic policy should create a system that ensured that property rights were enforced and that granted merchants access to judicial institutions and processes if disputes occurred. The creation of legal institutions and political agreements that offered security and protection to merchants and their goods should thus be interpreted as measures designed to encourage and facilitate trade. During the fifth century BCE, *symbola* (permanent bilateral treaty relationships) were created to regulate litigation between nationals of different states providing each party with a level of protection that was similar to *asylia*. As outlined by Gauthier, the purpose of *symbola* was to allow citizens of one city to gain access to justice in another.⁶⁶ Thus, for instance, Athens opened its courts to citizens of other states, and vice versa; because of the reciprocal nature of these agreements, judgments obtained in one city were also enforced in the other.⁶⁷ Gauthier and Ziegler consider the emergence of *symbola* agreements in the fifth century BCE as an indication that the Athenians were conscious of the need to accommodate and to regulate the thriving markets of Athens.⁶⁸ A further privilege, granted en masse to the citizens of Phaselis, was the right to appear before the Athenian Polemarch, a move that seems to have been intended to expedite the settlement of disputes arising from commercial activities.⁶⁹ Finally, foreign merchants also had recourse to seek judgment from two groups of magistrates – the *xenodikai* and the *nautodikai*. However, the lack of evidence pertaining to the role and duties of these officials make it impossible to ascertain under what circumstances such appeals could be made.⁷⁰

That the Athenians recognized the importance of coherent and clearly defined judicial institutions for regulating and accommodating commerce is also apparent from the introduction of the *dikai emporikai* in the fourth century. In essence, the *dikai emporikai* were commercial suits in Athens that involved maritime imports and exports. Although it is difficult to identify the precise social status of the individuals involved in such cases, it appears that a commercial occupation was sufficient to bring about legal proceedings, even overriding ethnic origins and social status.⁷¹ There are believed to have been a number of requirements for a case to be considered as a *dike emporike*: first, the dispute had to be commercial in nature; second, it had to involve the transportation of goods to or from Athens, and, finally, there had to be some kind of formal obligation.⁷² Special provisions were available for assuring a defendant's appearance at the ensuing trial, and uniquely strong measures would be taken to enforce the judgment of the maritime tribunals: for instance, those convicted in maritime suits were to be detained in prison until they had paid any penalty decided upon by the court (Dem. 31.1). The aim of this provision was not just to ensure that contracts were respected but to also ensure that no

wrong was done to any merchant. However, the defining aspect of these cases was the speed and frequency with which they were adjudicated. Although, as has been seen, legal infrastructures for adjudicating commercial disputes had existed in the fifth century, the procedures were too slow to adequately meet the needs of interregional traders (Xen. *Vect.* 2.3). Thus, in 346 BCE, we find the first reference to ‘mercantile’ suits (Dem. 21.176). The precise meaning of the term ‘monthly’ is still debated, but what is certain is that this new system was intended to ensure swift legal action thereby preventing locals from dragging out proceedings to the disadvantage of short-term visitors.⁷³ The protection to person and property offered by *symbola* agreements and the *dikai emporikai* reassured foreign merchants that if disputes did occur they would receive fair treatment and, in the case of the latter, not sustain undue transaction costs caused by delays in the judicial process. The Athenians also issued a law protecting merchants against spurious legal cases. Demosthenes (58.10–11) notes that it was specifically introduced in order to deter vexatious prosecutions brought against merchants and shippers, thereby ensuring that those who broke the law faced justice whilst the innocent were not annoyed by unfounded accusations.⁷⁴ Although, as with so many of the statutes referenced by the orators, the exact details of this law are lost, it is possible to ascertain that baseless charges brought against *emporoi* and *naukleroi* were punished with fines, arrests, and ‘other penalties’.⁷⁵ Later in the same speech (53–54), the speaker reminds the judges of Athenian dependence on foreign merchants – men who often faced many dangers and hardships to bring their wares to Athens – stressing the need to ensure they were dealt with fairly. Already mindful of this fact, Athens employed a series of officials charged with the dual responsibility of regulating mercantile transactions and guaranteeing the fair treatment of foreign merchants at the hands of citizens. These included *agoranomoi*, *metronomoi*, *sitophylakes*, *epimeletai tou emporiou*, and *dokimastai*.⁷⁶

THE STANDARDIZATION OF WEIGHTS, MEASURES, AND COINAGE

Another way in which the Athenians provided legal protection to the mercantile community was through the standardization of weights and measures. As Harris notes, ‘In a small-scale economy where most transactions occur among relatives, friends and neighbors, there is often little need for legal regulation; social pressure and the ties of friendship (*philia*) suffice to create the necessary amount of trust needed to exchange goods and services. By contrast, in large markets – such as the *agora* in the fifth and fourth centuries – where most exchange took the form of impersonal exchange between strangers, it was necessary to provide merchants and their customers with the assurance that all transactions would be fair and that all contracts would be enforced.’⁷⁷ To ensure

that sellers used the correct weights and measures, there were ten *metronomoi* or ‘Controllers of Measures.’⁷⁸ The Aristotelian *Constitution of the Athenians* (51.2) provides a general overview of the roles and duties of the *metronomoi* recording that they were specifically charged with ensuring the weights and measures used by retailers and wholesalers. Another source that documents Athenian concern with ensuring the accuracy of weights and measures is a law dating to the second century BCE (*IG II² 1013*). Although not dating to the Classical period, Harris has suggested that the roles and duties of the *metronomoi* were unlikely to have changed much over time – aside from taking into account modifications and changes in coinage standards – so the regulations listed in the inscription are likely to be very similar to those of the fifth and fourth centuries BCE.⁷⁹ The magistrates responsible for implementing this law were to make standard weights and measures for wet and dry goods and to compel all those who buy and sell to use them, including sellers in the agora, in workshops, in retail shops, and in wine shops and storehouses. If a merchant were found to be using containers that were smaller than the required size, the magistrate was instructed to confiscate the goods and destroy the container. Moreover, to ensure that the official weights and measures were implemented and maintained, the law instructs Diodorus, the son of Theophilus, from the deme of Halieus to hand them over to three public slaves stationed at various places. These slaves would be charged with ensuring the official weights and measures were available to any magistrates who request them and were not tampered with. The final clause in the law makes those who commit offenses in regard to these weights and measures subject to harsh penalties. There were also substantial fines for any magistrate who did not enforce the law as prescribed. Similar methods were also used to ensure the integrity of Athenian coinage.⁸⁰ The law of Nicophon passed in 375/4 BCE provides detailed information about Athenian methods for regulating the purity and weight of their silver coinage.⁸¹ Responsibility for enforcing the regulations fell to the *dokimastai* (testers), two publicly owned slaves, one of whom operated in the agora and the other in the Piraeus. The measure, which was primarily intended to safeguard the value of Athenian minted owls, also protected the property rights of traders – citizen and noncitizen alike – in possession of high purity, imitation coins (i.e., coins comparable in weight and purity to Athenian owls but minted elsewhere). Rather than confiscate such coins, as might be expected, those that were deemed of acceptable quality appear to have been returned to their owner.⁸² Moreover, this legislation granted the universal right to bring formal charges against anyone who violated the law by refusing to accept coins that had been officially approved. Intentionally or otherwise, this legislation also reduced transaction costs by providing increased legal protection and by codifying behavior.⁸³ The clause stipulating the acceptance of approved coins

also lowered transaction costs by providing experts who could quickly and reliably ascertain whether a coin was of good alloy.⁸⁴

CONCLUSION

The Athenians may have lacked much of the abstract conceptual toolbox of the modern professional economist, but we should not conclude from this that they were naïve about the economic consequences of the decisions they made in the Assembly. A hard-nosed empirical understanding of the need for revenues and the practical measures they could take to increase them was manifest in the various different strategies to reduce transactions costs studied in this essay. None of these measures were accidental: taken as a whole, it is legitimate to speak of a state policy toward trade. Far from being little more than a series of ad hoc measures to ensure the supply of necessities (grain, metals, timber), from our sources we can detect a more sophisticated understanding of trade and finance among Athenians gathered in the assembly, one that was not aimed at short-term measures, but which looked at these issues with an eye to the long term. The huge investments the Athenians made in terms of infrastructure, protecting merchants, and facilitating and supporting their activities through currency, officials, and courts, not to mention the creative ways in which they utilized their various forms of honors, is impossible to reconcile with the minimalist position advocated in much older (and current) scholarship. The Athenians were highly interested in the business of the *agora*, *emporion*, and *deigma* (and those who used them), and the policy decisions they made in the assembly bear this out.

NOTES

- 1 According to Garraty 2010: 20–26, governments benefit from institutionalizing and regulating the marketplace in at least three ways: to gain tax revenues, to ensure conversion of surplus commodities, and to control product distributions. Taxing market activities was an important source of revenue in most premodern states. Marketplace exchanges are spatially centralized and temporally predictable and therefore were more readily tapped for taxation than other, decentralized mechanisms of exchange (e.g., reciprocal exchange), albeit with substantial costs to the tax assessor (for enforcing tax payments, retaining tax collectors, book-keeping). Governing agencies may also interfere in marketplace exchanges in order to facilitate product conversion. For example, markets provide a means for state agents to convert wealth goods received as tribute into bulk commodities such as food or domestic wares (or vice versa). Finally, governments may wish to secure the importation of certain vital commodities or raw materials such as foodstuffs, construction materials, and mineral resources.
- 2 The effects that a reduction in transaction costs has on the structure and performance of organizations and markets have been a central theme of NIE economics since the publication of Coase's 'The Nature of the Firm' in 1937. For the most part, research on this topic suggests that lower transaction costs are almost always beneficial and have been linked to

direct cost savings: indirect benefits through improvements in agency costs, monitoring or coordination within existing organizations and markets, and even the creation of new types of market structures that are more efficient.

- 3 Benkler 2006: 106–16 and Ober 2008: 162.
- 4 See Coase 1988; Williamson 1981; Benkler 2006: 106–16; North 1981; Keohane 1984.
- 5 Ober 2008: 162.
- 6 Finley 1985b: 160.
- 7 See in particular Hopper 1979: 57–8 and Gauthier 1985: 157–62.
- 8 Lambert 2006: 117. See also Lambert 2004: 353–99; 2005: 125–59; 2007a: 101–54; 2007b: 67–100.
- 9 Engen 2010: 76.
- 10 For example, Bissa's recent study of governmental intervention in foreign trade in archaic and classical Greece focused exclusively on three commodities: silver, grain, and timber (Bissa 2009).
- 11 *IG II²* 343 (= *IG II³* 379). Schweigert 1940: 343; Schwenk 1985: no. 84; Engen 2010: 310–11, no. 28. Although Apollonides' services are not recorded, it is likely that they were trade related as he is honored on the recommendation of *emporoi* and *naukleroi*. The fact that the inscription does not record Apollonides' service is significant: on prior occasions when the assembly had bestowed honors due to a recommendation from the mercantile community, it was specifically because the recipient had taken care of *emporoi* and *naukleroi* who were transporting grain to Athens (for instance, *IG II²* 416[b] (= *IG II³* 454); Tracy 1995: 123, 127–8; Reed 2003: 94–5, no. 7; Engen 2010: 298–9, no. 20).
- 12 Walbank 1978: 280–4 no. 50; Reed 2004: 125 no. 47; Engen 2010: 278–9 no. 1.
- 13 For the date of Chaerephilus' naturalization, see Davies 1971: 566; Osborne 1983: 75–6; Garnsey 1988: 150–4; Worthington 2000: 297–8; Lambert 2006: 132 note 68; Engen 2010, 294–6.
- 14 Michell 1957: 286–9; Engen 2010: 295.
- 15 Walbank 2002: 63. Line three of the inscription contains a lacuna that is followed by the letters ΥΛΛΩΝ. Walbank believes that the letters form part of the name of a fish, either the μύλλος a type of fish from the Black Sea, or a ὕλλος a fish native to the waters of Egypt, whilst Lambert 2002: 47 believes the letters form part of the word [ν]αύλλων (freight charge) referring to the honorand's reduction of his transport charges when trading in Athens (cf. *IG II³* 430).
- 16 Tod no. 162; Austin and Vidal-Naquet 1977 no. 86; Rhodes and Osborne 2003 no. 40.
- 17 Andoc. 1.133–4. Boeckh 1842: 318; Hopper 1979: 100.
- 18 For example, during the early 330s, whilst still recovering from the defeat at Chaeronea in 338 BCE, Athens was able to generate approximately 300 talents from a revised import/export tax. Amemiya 2007: 97. Lycurg. 1.58; Dem. 21.133; 24.120; 34.7; 35.29–30; 59.27.
- 19 Xen. *Hell.* 1.1.22; Ephorus *apud* Diod. Sic. 13.63.
- 20 Michell 1957: 256–7; Isager and Hansen 1975: 23.
- 21 Möller 2007: 379.
- 22 Hasebroek 1933: 103; Gernet 1979: 364–75; Burke 1992: 199–226.
- 23 Amemiya 2007: 106–14.
- 24 This should be unsurprising: in the same way that they were reticent about publicly acknowledging that they profited from the taxes and harbor duties paid by their benefactors, the Athenians were equally reluctant to announce that they also benefited from the exports these men arranged.
- 25 Low 2005: 99.
- 26 *IG I³* 117; *IG II²* 12; *IG II²* 81; *IG II²* 342 (= *IG II³* 468ab); *IG II²* 343 (= *IG II³* 379); *IG II²* 360 (= *IG II³* 367); *IG II²* 398b; Din. 1.43 (see also Ath. 3.119f–120a).
- 27 Bresson 2000: 145–6.
- 28 Lewis 1959: 208–308; Erxleben 1974: 487; Davies 1971: 566.

- 29 For an overview of the impact that piracy had on ancient markets, see Gabrielsen 2001: 219–23.
- 30 The decree also sought to protect merchants by creating a naval force specifically intended to deal with pirates so ‘that the sea be swept clean’.
- 31 Xen. *Hell.* 1.1.36; 5.4.60–61; Dem. 17.20; 18.87–88; 18.301; 50.4–6; *IG II²* 408; *IG II²* 1628; Theopomp. *FGrHist* 115 F 292; Philoch. *FGrHist* 328 F 162.
- 32 Diod. Sic. 15.34.3; Xen. *Hell.* 1.1.36; 5.4.60–61; Dem. 17.20; 18.87–88; 18.301; 50.4–6, 17–20; *IG II²* 408 (= *IG II³* 338); *IG II²* 1628.
- 33 For example, in 410 BCE, merchants were charged a 10% tax on their cargo if they sailed through the zone being patrolled and protected by the Guardians of the Hellespont. Polyb. 4.44.4; *IG I³* 61, dated to ca. 420 BCE.
- 34 Dem. 50.17–21. See Gabrielsen 2001: 235–6 and Gabrielsen 2003: 397.
- 35 Establishing a permanent presence in a region made it easier to disrupt regional piracy and force it to the fringes of society. A colony situated on a major trade route made it possible to undertake continuous random spot checks on all shipping within a certain radius. This type of monitoring was considerably cheaper than a full-scale expedition and could be more precisely targeted. Ormerod 1924: 108–9. See also de Souza 1999: 41.
- 36 See Gabrielsen 2001: 233–4.
- 37 *IG II²* 1629.217–231 = Rhodes and Osborne 2003 no. 100.
- 38 Rhodes and Osborne 2003: 525 and De Souza 1999: 38–41; 50–53. *IG II²* 1623, lines 276–308 can also be identified as displaying a concern with guarding against piracy.
- 39 For example, Ormerod 1987: 108–9 argues that one of the primary purposes of the cleruchies throughout the Athenian empire was to help suppress piracy and banditry.
- 40 There have been various arguments concerning the precise nature of *asylia*. Hasebroek 1933: 128 suggests that it only applied within the granting state’s territory; Michell 1957: 227 argues that it applied to nationals of the granting city when they went abroad; MacDowell 1978: 78 suggests it protected the honorands from being seized by Athenians when abroad; Hopper 1979: 59 proposes that it offered honorands protection from judicial or military seizure. See in general Lintott 2004 with references to earlier scholarship.
- 41 Rigsby 1996: 1–28; Lintott 2004: 340–1.
- 42 Engen 2010: 185–7.
- 43 *IG I³* 174; *IG I³* 98; *IG II²* 81; *IG II²* 286 and 625(= *IG II³* 393a and b); *IG II²* 360 (= *IG II³* 367).
- 44 *IG II²* 12, lines 17–21.
- 45 *IG II²* 360 (= *IG II³* 367) = Michell 1957 no. 110; Schwenk 1985 no. 68; Rhodes and Osborne 2003 no. 95.
- 46 Engen 2010: 152–5.
- 47 Nussbaum 1954: 6.
- 48 Hopper 1979: 113, proposes that the title was purely honorific while Henry 1983: 130–62 and Herman 1987: 137–8 believe the award offered both tangible and intangible benefits. Marek 1984: 333–81 and Gauthier 1985: 10, 16 take a slightly different approach, considering the award in terms of privilege and use rather than honor and function.
- 49 Culasso Gastaldi 2004: 6–22. Pollux, for instance, records that *proxenoi* were obliged to procure seats and games at festivals for visitors hailing from his adopted city (Poll. 3.59).
- 50 Hasebroek 1933: 129; Ténékidès 1965: 540–1; Wallace 1970: 189–208; Marek 1984: 359–61; 1985: 67–78.
- 51 Thuc. 3.52; 5.59; *IG II²* 8; Plut. *Cim.* 16; Xen. *Hell.* 1.1.35; 6.1; 6.3.3.
- 52 Ziebarth 1932–33: 245.
- 53 Rostovtzeff 1941: 245, 1375 note 74; Burke 1992: 207.
- 54 Marek 1984: 359–61; 1985: 67–78.
- 55 Rubinstein 2009: 126–7 suggests that most grants of *ateleia* awarded in recognition of military and political services were honorary in nature whereas those awarded for commercial services were intended as tax incentives.

- 56 Oliver 2007: 31.
- 57 The scholion on Demosthenes' speech *Against Leptines* (20.113) clearly states that *ateleia* related to both liturgies and commercial taxes: 'Ateleia is twofold; for it relates either to commerce or to liturgies'.
- 58 Walbank 1990: 442 no. 10; Lambert 2006: 53; Engen 2010: 287–8 no. 10. Because the unknown honorands are also granted *asylia* for both themselves and the goods they transported, it is almost certain that they were professional merchants and that they were honored for commercial services.
- 59 Lambert 2006: 136 n. 100.
- 60 IG II² 141.
- 61 IG II² 283; IG II² 337 (= IG II³ 337); IG II² 342 (= IG II³ 468ab); IG II² 343 (= IG II³ 379); IG II² 360 b.
- 62 Burke 1992: 209 with n. 41. See also Engen 2010: 192–7.
- 63 Dem. 20.30–33; Isoc. 17.57. Henry 1983: 22–38.
- 64 Dem. 10.37–40. Engen 2010: 159–60; Isager and Hansen 1975: 54.
- 65 Boeckh 1842: 154–550; Michell 1957: 363; Trevett 1992: 24, n. 10.
- 66 Gauthier 1972: 389–90.
- 67 Lewis 1975: 263.
- 68 Gauthier 1972: 157–66; Ziegler 1975: 62–5.
- 69 de Ste. Croix 1961: 100–8; Reed 2003: 31–2, n. 29.
- 70 Cohen 1973: 163–84.
- 71 Paoli 1930: 105–9; Gernet 1955: 162–3; Harrison 1968: 175; Todd 1993: 192–4.
- 72 The most sustained attempt to define the requirements for a case to be deemed as *dike emporike* is given by the speaker in Dem. 32.1. For instance, Paoli 1930: 101–5; Gernet 1938: 1–44; 1955: 186–7; and Todd 1993: 336, propose that the commercial courts must *either* have involved disputes arising from the import or export of goods to or from Athens, *or*, disputes that had arisen in relation to a voyage between two other regions but in which there was a written contract. In contrast, Cohen 1973: 99–114; 1992: 104; Isager and Hansen 1975: 87; Burke 1992: 210; Rhodes 1981: 664–5; and Wilson 1997: 199–207 suggest that both a written contract *and* the movement of goods to or from Athens were required to make a case eligible to be heard in the commercial courts see. The problem with all these interpretations is that they translate the Greek word *symbolaion* as 'contract,' which is incorrect. The term refers to all obligations arising from delict or contract. See de Ste. Croix 1961: 102. Harris forthcoming shows that the application of the law is broader than previous scholars have recognized.
- 73 Harrison 1971: 16, 21, 154; Gauthier 1974: 424–5; Vélissaropoulos 1980: 241–5; and Isager and Hansen 1975: 85 consider that, when applied to maritime suits, the term 'monthly' (either *kata mena* or *emmenoî*) should be understood as meaning that cases had to be settled within a month. In contrast, Cohen 1973: 23–36; MacDowell 1978: 321–2; Rhodes 1981: 583; 1995: 315; and Hansen 1983: 167–70 think that the term is used to indicate that cases could be heard every month.
- 74 For explicit recognition of the correlation between the enforcement of contracts and the volume of trade passing through the Piraeus see Dem. 56.49.
- 75 Christ 1998: 141–2.
- 76 *Agoranomoi*: [Arist.] *Ath. Pol.* 51.2; *Ar. Ach.* 723, 824, 968 and Stanley 1976: 198–217; Millett 1990: 192; Migeotte 1997: 37–8; 2005: 287–301; Bresson 2000: 183–206. *Metronomoi*: Stanley 1976: 212–17. *Sitophylakes*: Lys. 22.5.8; [Arist.] *Ath. Pol.* 51.3 and Stanley 1976: 302–7; Rhodes 1981: 577–8; Gauthier 1981: 19–28; Figueira 1986; Garland 1987: 77–8. *Epimeletai tou emporiou*: [Arist.] *Ath. Pol.* 51.4. *Dokimastai*: see lines 37–8 of the Athenian law on silver coinage published in Stroud 1974: 157–88. See also Stanley 1976: 51, 189, n. 71, 200, 282.
- 77 Harris 2006: 146.
- 78 Ehrenberg 1932; Vanderpool 1968.
- 79 Harris 2013: 30–1.

- 80 For a detailed commentary, see Stroud 1974: 157–88. For another view, see Giovannini 1975: 185–95. See also Harris 2013: 28–30.
- 81 Although the inscription is securely dated to 375/4 BCE, it is unclear why there was a need for legislation at this time. Austin and Vidal-Naquet 1977: 328–9 suggest that the law must have been instigated at a time when Athens was facing an exceptional financial crisis that could be exacerbated by a large influx of imitation coins.
- 82 Psoma 2012 with references to earlier analyses.
- 83 Rhodes and Osborne 2003: 118.
- 84 Martin 1991: 26–7; Stumpf 1986: 23–40.

CHOOSING AND CHANGING MONETARY STANDARDS IN THE GREEK WORLD DURING THE ARCHAIC AND THE CLASSICAL PERIODS

Selene E. Psoma

The evidence of coins has much to tell us about markets and trade in the Ancient Greek world. There are primarily two kinds of numismatic evidence relevant to the topic of markets. First, there is the evidence of coin hoards. The presence of coins from one city in a hoard found in another city may reveal trade links between the two cities. Second, a common weight standard shared by two or more cities may reveal commercial ties. A common weight standard makes it easier for merchants from one city to exchange coins in another city and thus facilitates commercial relations and helps to expand markets.¹ Common weight standards may therefore reveal a city's commercial policy. But we must be careful when interpreting numismatic evidence. Coins may travel from one city to another for the purposes of trade, but it is also possible that coins served to pay for mercenaries or for other military purposes. Two or more cities may also have shared a common weight standard to facilitate military finances. When interpreting numismatic evidence, therefore, one must always take into account all available literary, epigraphic, numismatic and archaeological evidence.²

The Greek cities issued their coinages on different standards that either derived from weight standards in use before the invention of coinage,³ or were created afterwards, sometimes by adopting a reduced version of one of the main monetary standards.⁴ During the Archaic and the Classical periods the main monetary standards of the Greek world were the Lydo-Milesian, the Persian, the Euboic, the Aeginetan and the Corinthian.⁵ These standards have

something to tell us about our subject because they were adopted by cities far away from their original *Heimat*. From this point of view, the choice of a monetary standard by an issuing authority may say more about trade than hoards, while hoards sometimes reflect the impact of a monetary standard in an area.⁶

Some other standards in use during the Archaic and Classical periods either derived from or were connected to these weight-standards.⁷ Reduced versions of the main standards were created in areas with significant natural resources such as Southern Italy and Aegean Thrace.⁸ We will try to show that trade and markets often influenced the choice of weight standards and also of their reduced versions.

THE MILESIAN STANDARD

We begin with the oldest weight standard, the so-called Lydo-Milesian. This was the local standard of Lydia and was adopted by Miletus for its electrum and early silver coinage.⁹ This was also the standard of the earliest electrum coinages of the cities of Ionia. The division of the stater of 14.2 g followed the duodecimal system – that is, the stater was divided into thirds, sixths, twelfths, and so on.¹⁰ Sometime later the Mainland system of division was followed (with fourths – that is, drachms – and obols).¹¹ The Milesian standard was adopted by the Ionian cities of Erythrai, Ephesus, Clazomenae, Teos and Samos,¹² by cities in Caria, such as Poseidion [?] of Carpathos, Lindos and Ialysos on Rhodes,¹³ by cities of the Chalcidic peninsula (Torone, Sermylia, Argilos and others) and by some Cycladic islands.¹⁴

The cities in Ionia that adopted this standard were often neighboring cities, and this adoption may easily be explained by the fact that this was the standard with which some of these cities issued their electrum coinages.¹⁵ Ionia's links to Caria are also revealed by the use of the Milesian standard by the cities previously mentioned.¹⁶ The various resources of Ialysos and Lindos, cities of the island of Rhodes, could be either exported to Miletus or transported elsewhere by Milesian traders: fish, wine, cabbages, balsam, raisins, figs and other agricultural products as well as metals, bread, honey, marble and sponges.¹⁷ Cnidos, whose earliest silver was also on this standard, had a variety of agricultural and manufactured products.¹⁸ Silver coins that are attributed to Miletus were part of a number of hoards buried in Western Asia Minor, Ionia, Caria and Cilicia.¹⁹

We find a reduced version of the Milesian standard in the electrum of a number of cities in Thrace and the earliest silver coinages of some cities of the Chalcidic peninsula.²⁰ Dikaia *par' Abdera*, Maroneia and possibly some other cities in Thrace issued early electrum fractions on this standard.²¹ Small cities of the peninsula of Pallene (Aigantioi *et alii*), Torone, Sermylia and cities situated in Sithonia or in the middle of the Gulf of Singos and Torone, as well as

Argilos west of the estuary of the Strymon river, issued their early silver on the Milesian standard.²² The significance of this standard in this area is reflected in monetary circulation. The earliest hoard from the Chalcidic peninsula, *CH* VIII 39, was found at Gerakini, in the *chora* of Sermylia, and contained staters and fractions on the Milesian standard.

As I have shown elsewhere, Alexander I, the king of Macedonia, adopted a reduced version of the Milesian standard for tetradrachms (staters) and smaller fractions.²³ The king clearly decided to use this standard because of his commercial relations with the Chalcidic peninsula, in particular with the cities of Pallene that issued staters and fractions on this standard.²⁴ For his largest denomination (triple staters), Alexander I adopted the standard of the cities of the Thasian Peraea.²⁵ Here he was following Abdera and local *ethne*. This was a way to export silver from the newly acquired mines of the Pangaeum mint and also to pay for commodities.²⁶ One recalls that some triple staters of Alexander I were buried in Egypt from where the king imported grain as Bacchylides reports.²⁷ In other words, for short distance and local trade he used the Milesian standard of his neighbors, but for long-distance trade he used the standard in which traditionally triple staters were issued.

The common weight standard shared by Alexander I and the cities of the Chalcidic peninsula has nothing to do with joint military action. The king's army had moved successfully to the East and occupied the territories of Anthemous and Crestonia, north of lakes Bolbe and Pyrrolia,²⁸ but these areas were distant from the cities that issued on the Milesian standard. The link between the king and the cities of the Chalcidice was commercial, not military. Torone and the cities of the Pallene produced wine of excellent quality and in very large quantities.²⁹ This was a commodity that the Macedonians appreciated the most and imported from the Chalcidic peninsula. The term *Mendaïos oinos* is used to denote wine from the wider area that passed through the port of Mende to Pydna, Methone and Pella and found its way to Aigeai and all other Macedonian *poleis* and palaces.³⁰ Wine exports from Mende to the Macedonian court continued during the Hellenistic period, as amphora stamps from Mende found in very large quantities in the palace of Pella reveal.³¹

The adoption of the Milesian standard in this area well before the late sixth century BCE is connected with the fact that this was the oldest monetary standard and that there were links between Ionia and this area. Although there are no colonies of Miletus in the Chalcidic peninsula, commercial links between the Greek North and Ionia are revealed by excavations.³² Miletus, which contributed eighty ships to the battle at Lade (Hdt. 6.8), could import timber of very good quality for shipbuilding, grain, wine, olive oil and silver from Aegean Thrace. These natural resources were well known to the Milesians and Histiaeus. According to Herodotus (5.23), Megabazus said to Darius: '[T]here is abundant wood for ship-building and the making of many oars and also

the silver mines and a big population, both Greek and barbarian.’ It was to Myrkinos that Aristagoras of Miletus later retreated and made this his headquarters (Hdt. 5.126).³³ Further evidence for the presence of Ionians in the area of the Strymon river during the first half of the sixth century BCE is provided by Suda, which notes Colophonians and other Ionians involved in mining activity in this area.³⁴ We recall also that Samians, Erythraeans and Parians were involved in the international arbitration (*diaitesia*) between Chalcideans and Andrians for colonizing Acanthos.³⁵

The Milesian standard also had a significant impact in the Cycladic islands.³⁶ Melos, a Dorian colony (Str. 10.5.2) in the Cretan Sea, issued its coinage on this standard.³⁷ The links of Miletus with the Cycladic islands are revealed by Herodotus, who mentions Parian arbitration at Miletus (Hdt. 5.28–31), and also from Polyaeus about Milesian efforts to get control of Naxos (Polyaen. *Strat.* 8.36.1).³⁸ Miletus’ thalassocracy and trade networks may have had an impact on the monetary habits of some Aegean islands. Melos, which issued its staters on the Milesian standard, was well known for its goats, its honey and most significant, for its metals, the *Meliakē* being the most significant of them.³⁹ Melos continued to strike its coinage on the Milesian standard, although this standard lost its significance after the destruction of Miletus in 494 BCE and the end of the Ionian revolt.⁴⁰ There are also some other early Cycladic coinages on this standard whose attribution is difficult.⁴¹ This is the short but glorious history of the earliest Greek coin standard.

THE PHOCAIC STANDARD

The standard (16.5 g) of the city of Phocaea may have been a reduced version of the Euboic. As the earliest coinages issued on the Euboic standard, it was divided on the duodecimal system, with halves, *hektai*, *hemiekta*, and so forth.⁴² The significance of this standard may be deduced by its early adoption by Cyzicus, the Milesian colony in Mysia.⁴³ This was also the weight of the later electrum coinages of Phocaea and Mytilene and of the famous Cyzicene staters.⁴⁴ From the second half of the fifth century and during most of the fourth century BCE, Cyzicene staters were the most prominent currency in the Black Sea area as rich hoard evidence and the well-known fourth-century BC decree of Olbia reveal.⁴⁵ They found also their way abroad and are often mentioned in Athenian financial documents, temple inventories and literary sources.⁴⁶ Cyzicus’ choice of this standard is clearly connected with trade. The emblem of the city, the tuna fish, occurs on the earliest electrum fractions of this city and reveals the significance of fish trade.

It might be that this standard, on which electrum coinage was mainly issued, had an impact on the fractional coinages of cities of Aeolis, Troas and Mysia.⁴⁷ However, there are still no systematic studies of these coinages, and we know

only small fractions of most of them. The Phocaic may have also been the earliest monetary standard of Ainos, an Aiolian colony, with population from Alopeconnesus, Methymna and Mytilene.⁴⁸ Ainos, at the mouth of the Hebros' delta, was a significant centre for trade, from where trade routes led to inner Thrace. The city also commanded fertile lowlands (Plin. *HN* 18.7.70).⁴⁹

The Phocaic standard is also found in Southern Italy at Velia, a colony of Phocaea, and at Velia's neighbor, Poseidonia, a colony of Sybaris.⁵⁰ Massalia, another colony of Phocaea, also followed this standard.⁵¹ This Phocaic standard had an influence on the coinages of the Greek cities of Campania, and a slightly reduced version of it was adopted by Cyme and Neapolis.⁵² Empurias, a Phocaic settlement, also adopted the Phocaic standard.⁵³ The adoption of this standard by Velia and Massalia, both colonies of Phocaea, says a lot about the relation between colonies and mother city.⁵⁴ These relations included trade.

THE CHIAN STANDARD

The rich island of Chios, with its important agricultural production and a large number of slaves, issued its Archaic and Classical coinage on its own standard with staters of 7.9 g and hemistaters of 3.9 g.⁵⁵ As I have shown elsewhere, a reduced version of this standard was also adopted by Abdera, a joint colony of Clazomenae and Teos, and also by its neighbor, Maroneia.⁵⁶ Both cities were situated on the Aegean coast of Thrace. According to Pseudo-Scymnos, Maroneia was a colony of Chios (*Ad Nicomed. reg.* 676). Contacts with Chios are revealed by the very significant presence of Chian pottery at the site of Archaic Abdera and also at other sites in Aegean Thrace.⁵⁷ Abdera, followed by Maroneia, further reduced this standard, while both cities issued silver staters and fractions down to the 330s (Maroneia), and fractions even later (Abdera).

Chios continued to use its own standard. One-third staters of 2.6 g were struck from the 430s and these were the coins Thucydides (8.101.1) refers to as *tessarakostai*.⁵⁸ Electrum and silver of 15.6 g were issued in the late fifth century BCE and later silver drachms, tetrobols and tetradrachms down to the 330s. The standard of Chios had an influence on the monetary practices of Western Asia Minor, Thrace and a number of issuing authorities under the Great King during the fourth century BCE. We will return to this standard while discussing changes of weight standards.

THE SAMIAN STANDARD

The Samians adopted a reduced version of the Milesian standard and reduced it further. Samian staters are mentioned in a sixth-century BCE dedication to Hera by two citizens of Perinthus, a Samian colony on the Northern coast

of the Propontis (*IG XII 6, 2, 577*, lines 15–19). Samos issued a full range of denominations down to hemiobols following the division of the stater in drachms (fourths) and obols (twenty-fourths).⁵⁹

Like other cities of Asia Minor and the Propontis, Samos issued ΣΥΝ tridrachms with Heracles the snake killer on the obverse and the lion's scalp on the reverse.⁶⁰ These coins date after the end of the Peloponnesian war, Samos' capitulation, the establishment of a decarchy and the return of the oligarchs (*Xen. Hell.* 2.3.6–9). They were on the Chian standard, and as many cities of Western Asia Minor, Samos issued its fourth-century BCE silver on this standard.⁶¹ There was a gap in the coinage of the city during the period of Athenian occupation (366–322 BCE). When Samos reopened its mint in the late fourth century BCE, the local standard was reintroduced. The term *stateres patrioi* found in the Grain Law (*IG XII 6, 1, 172A*, line 8), an inscription of early Hellenistic date, refers to this standard. The re-adoption of its own standard may be easily understood as the city desired to have its own monetary policy during a period Alexanders were the coinage par excellence all around Eastern Mediterranean.⁶²

We now turn to Mainland Greece where coinage was introduced during the second half of the sixth century BCE.⁶³ No matter which city was the first to introduce coinage, literary, epigraphic and numismatic evidence point to three distinct standards in this area: the Aeginetan, the Corinthian and the Euboic, which was another old weight (and later monetary) standard.⁶⁴ The standards of Corinth and Athens were adjusted to the Euboic,⁶⁵ their staters being the half of the Euboic stater of 17.2 g. Double staters began to be issued by Athens before the end of the sixth century and were called *tetradrachma*, referring to their equivalence to four drachmas.⁶⁶ Both the Aeginetan and the Euboic standards followed the duodecimal system, but at Aegina a terminology based on a drachma divided into six obols was adopted.⁶⁷ Corinth followed the division in thirds and sixths, but for these the terms drachma and *hemidrachmon* were used, as revealed by epigraphic evidence.⁶⁸ As at Aegina, at Corinth, Athens and the cities that followed the now so-called Euboic–Attic standard, the drachma was divided into six obols.⁶⁹

THE AEGINETAN STANDARD

The Aeginetan standard was adopted by all issuing authorities in the Peloponnese with the exception of Corinth and some small neighbors,⁷⁰ by the city of Delphi and the Phocians, by the cities of Boeotia, by Malis, the Opountian Locrians, the cities of Thessaly, most of the Cycladic islands and Crete.⁷¹ We find it also at Teos in Ionia, Cyme of Aeolis, a number of cities of Caria⁷² and in the Black Sea.⁷³ In many cases, it was slightly reduced, most probably to obtain a profit in exchange.⁷⁴

Aegina may have produced perfumes and pottery for everyday use, as in modern times, but nothing else.⁷⁵ The adoption of the Aeginetan standard may be explained by what Ephorus says about the sea trade of Aegina.⁷⁶ Aristotle reports that the Aeginetans were mainly traders (*Pol.* 1291b24). Aeginetans were involved in slave trade, as is revealed in the explanation offered for the expression ‘cargo from Aegina’ (Steph. Byz. *s.v.* Αἴγινα).⁷⁷

Aegina’s silver coinage served as a commodity to buy local products in one area and sell them in another.⁷⁸ The Aeginetans transported all sorts of commodities.⁷⁹ After the battle of Plataea, one could find in the port of Aegina ships leaving for many different destinations.⁸⁰ Aeginetan ships brought products to the port of Cyllene in Elis and then transported these with mules to Arcadia (Paus. 8.5.8).⁸¹ The earliest hoards buried in Arcadia and Elis contained only Aeginetan currency (*IGCH* 15, 20). Both Pollux (9.74) and Hesychius (*s.v.* χελώνη) refer to the turtle as *Peloponnesion nomisma*.⁸² Large numbers of Aeginetan turtles are also found in hoards of Thessaly, an area well known for its rich agricultural production and wealth.⁸³ The earliest silver coinage of Crete was pseudo-Aeginetan and was issued by Aegina’s colony, Cydonia.⁸⁴ Aegina is heavily represented with its staters in the earliest hoard of Archaic date from Crete (*IGCH* 1), and also in early hoards buried on the Cycladic islands (*IGCH* 6, 7, 8). These hoards also contained silver coins from Cycladic mints and also silver on the Aeginetan standard from South West Asia Minor.⁸⁵ This has been viewed as an indication of a well-organized trade route linking these islands to South-West Asia Minor. Aeginetan merchants could have transported marble from Paros and other islands to this area.⁸⁶

Remaining in South-West Asia Minor, one recalls that Cnidos, Chersonnesus and Cos as well as Camiros of Rhodes also adopted the Aeginetan standard.⁸⁷ Hoards contain staters of Aegina that reached these areas and traveled far to the East, as the Apadana (Persepolis) foundation deposit, dated ca. 514–511 BCE reveals (*IGCH* 1789).⁸⁸ There is good evidence for trade between Aegina and Southern Asia Minor: after the battle of Plataea a noble lady from Cos who was freed by Pausanias of Sparta had no trouble finding a ship at Aegina to bring her back home (Hdt. 9.76). Cnidos, Cos and the island of Rhodes produced many different commodities that could be transported by Aeginetans.⁸⁹

The impact of Aeginetan currency in South-Western Asia Minor is apparent in a series of staters depicting a sea turtle on the obverse and two distinct incuse squares on the reverse.⁹⁰ There were significant links between Camiros and Chersonnesus as the decree of Camiros (*Syll.*³ 339) referring to *ktōinai* of the Camireis both on the island and the mainland shows.⁹¹ A number of coinages issued by Astyra, Halicarnassos, Caunos and some other cities in Caria also reveal the influence of the Aeginetan standard.⁹² Halicarnassus could export wine while Mylasa could export different agricultural products, marble and hemp (*kannabe*).⁹³ Teos in Ionia switched from the Milesian to the Aeginetan

standard before the end of the sixth century BCE.⁹⁴ Cyme in Aeolis also issued its coinage on the Aeginetan standard.⁹⁵

The Aeginetan standard of a fifth-century BCE silver coinage issued in Northern Asia Minor reveals contacts between Aegina and this area.⁹⁶ Later, in the fourth century, Sinope, located on the southern coast of the Black Sea, issued its silver coinage on the Aeginetan standard and shared standard and reverse types with Istria and Olbia, two other colonies of Miletus, situated on the western and the northern coasts of the Black Sea.⁹⁷ Olbia and Istros were significant suppliers of grain during the fourth century BCE.⁹⁸ From the early fifth century BCE, the Bosporean cities also issued their coinages on a slightly reduced version of the Aeginetic system.⁹⁹ The use of the Aeginetic standard during the fourth century BCE for their coinages reveals traditional contacts with Aegina. From these areas the Aeginetans transported grain; Herodotus mentions Aeginetan cargo ships with grain in the area of Abydos when Xerxes was in the city (7.147.2). This area also supplied slaves to the Greek world, as the names Paphlagon and Sinope given to slaves in Greece indicate (Ath. 13.67.28).¹⁰⁰ Sinope linked Greek cities on the eastern coast of the Black Sea to Greek cities in the Aegean because it laid on the route to Phasis (Polyb. 4.56). For instance, Xenophon saw merchant ships at Sinope sailing from Trapezous (Xen. *An.* 5.4.11).¹⁰¹ Aeginetan commercial activity in Paphlagonia may be also reflected in the name of *Aeginetes*, a *polichnion* and a river of Paphlagonia.¹⁰² Commodities that could be transported from this area were nuts (Ath. 2.43.27), fish (*kestreis*: Ath. 3.87.12; 7.77.35), ruddle (*miltos*: Hsch. *s.v.*), maple, oil (Str. 12.3.12) and slaves.

A common Aeginetan standard also links Paros with its colonies, Thasos and the cities of the Thasian Peraea. Parians were active in this area down to the first decades of the fifth century BCE, as epigraphic evidence reveals.¹⁰³ Paros' silver coinage on the Aeginetan standard consists only of staters. It also resembles the coinages of Thasos and the Peraea on iconographic, stylistic and technical grounds.¹⁰⁴ We have suggested that the standard of Thasos and the cities and tribes of the so-called Thasian Peraea is a reduced version of the Aeginetan standard.¹⁰⁵ During the fourth century BCE, the Aeginetan system was used at Thasos for calculating amounts of money.¹⁰⁶ Thasos and the cities of the so-called Thasian Peraea could export different products, including timber, metals, marble and wine.¹⁰⁷

Coins of Aegina are extremely rare in the North, but this is not an indication that Aegina did not have trade links with this area. One can explain the absence of Aeginetan coins in hoards from this area by the fact that most cities in this area minted their own coins from an early period. One recalls that in Asia Minor, the presence of Aeginetan currency is also very limited.¹⁰⁸ This is also the situation in Boeotia and the Cycladic islands, where coinages were issued on this standard from the last decades of the sixth century BCE.¹⁰⁹

But early hoards from areas as Thessaly, Elis and Arcadia that introduced coinages some decades later, and relied for a period only on the coins of Aegina, included only Aeginetan currency.¹¹⁰ These hoards all date before the introduction of the local coinages.

The new coinages in the Peloponnese that began after Leuctra were all on the Aeginetan standard, which was also the standard of their great ally, the Thebans.¹¹¹ The electrum drachms and obols of Thebes depicting Dionysus' head on the obverse and Heracles Drakontopnigon on the reverse corresponded to five staters and a stater of Aeginetan weight.¹¹² During the fourth century the Achaean League and the Opountian Locrians issued their splendid silver coinages with their own types but on the Aeginetan standard in use in these areas from the sixth century BCE.¹¹³

There were no coinages on the Aeginetan standard in southern Italy and Sicily.¹¹⁴ This corroborates hoard evidence; there are few turtles in hoards buried in these areas.¹¹⁵ However, the arrival of Aeginetan merchants bringing most probably Attic pottery in Etruria may be deduced from the dedication of Sostratus.¹¹⁶

THE EUBOIC STANDARD AND THE EUBOIC-ATTIC STANDARD

The Euboic standard with a stater of 17.2 g was one of the earliest standards.¹¹⁷ It shares with the Corinthian standard the division of the stater into thirds and sixths and follows the duodecimal system.¹¹⁸ This was the standard of the earliest coinages of the Euboean colonies in southern Italy (Campania), Sicily and the Chalcidic peninsula.¹¹⁹

It is striking that the cities of Euboea did not issue their early coinages on this standard.¹²⁰ Chalcis, Eretria and Carystos issued their coinages after a significant change took place before the end of the sixth century BCE: the Euboean stater was then divided in the same way as the Attic¹²¹ and the Boeotian staters.¹²² This standard is called the Euboic-Attic standard. Scyros and Peparethus followed the Euboean cities.¹²³ Cythnos, Seriphus and at times Siphnos struck coins of 4 g, that could be exchanged with coins on both the Aeginetan and the Attic-Euboic standards.¹²⁴ The cities of Sicily and the Chalcidic peninsula, two areas where Euboean presence was significant, also adopted this Attic-Euboic standard.¹²⁵ Delos, an island with strong ties to Athens issued its silver coinage on this weight standard.¹²⁶ It was also true for the earliest coinage of the Thracian Chersonnese and of Methymna on Lesbos.¹²⁷

This new standard was also adopted by the cities of Cyrenaica.¹²⁸ The precious *silphion* was one of the commodities that this area could provide to traders. Attic currency arrived in this area, as some overstrikes of Attic tetradrachms reveal.¹²⁹ Later in the 420s, the comic poet Hermippus reported the arrival at Athens of other products from Cyrenaica such as hides (*derma boeion*).¹³⁰

Apollonia and Mesambria both issued their silver coinages on the Attic standard and adopted a reduced version for smaller fractions.¹³¹ The coinage of Mesambria was not of a very significant volume. Hoard evidence shows that Apollonia's silver coins circulated widely in the area west of the city,¹³² while the royal edict of Pistiros reveals the leading role of Apollonia in trade in Thrace.¹³³

Clazomenae and some other Ionian mints adopted this standard during the fifth century BCE and continued to use it during the fourth century.¹³⁴ The Athenians Themistocles and his son Archepolis struck their coinages on the Attic standard in Western Asia Minor.¹³⁵ When the Athenian fleet was based on Samos during the Ionian war, Samos struck silver on the Attic standard and with its own types most probably to fulfill the needs of the ten Samian warships engaged in the war against Sparta and its allies (Xen. *Hell.* 1.6.25, 29; 1.7.30; Diod. Sic. 13.97.2). From the same period date silver tetradrachms on the Attic standard issued by an unknown satrap, possible Tissaphernes, with a bearded man's portrait wearing the Median *tiara*, and an owl on the reverse. This money served the needs of the Ionian war.¹³⁶ Later, most probably in the years Chares resided at Sigeion (335/334 BCE), the city issued a silver coinage with Athenian types and standard.¹³⁷

In these cases, the adoption of this standard seems to reflect political and military needs rather than commercial ties. However, it reflects the growing significance of the Attic standard, which already had international character. Attic silver is found in a number of hoards buried in Attica and Euboea.¹³⁸ There is little evidence for the circulation of Attic weight coinage in Asia Minor, Thrace, the Black Sea and Lycia.¹³⁹ It is more frequent in Egypt, Syria and the Levant, and also in Sicily from the late 410s onwards. Imitations of Athenian tetradrachms started towards the end of the fifth century BCE and kept on being issued during the fourth century in the East, Egypt and the West (Sicily). These coins served various needs and also were used for military payments.¹⁴⁰ The arrival of a large number of Athenian tetradrachms and imitations in Syria, Phoenicia and the Levant down to the arrival of Alexander points to trade links and special commodities and reflects, in my opinion, what Xenophon (3.9.2–3.10.4) says about Athenian coinage of the fourth century BCE.¹⁴¹

THE CORINTHIAN STANDARD

According to Thucydides (1.13.2–6), the Corinthians were well known for being great merchants, and Corinth was probably the most important centre for trade over a long period of time.¹⁴² Literary sources and archaeology provide plenty of information about Corinthian trade. Corinthian pottery is found in large quantities in the West.¹⁴³ Corinthian ships were commoner in

the West than any others; Herodotus (1.24) says that Arion leased a Corinthian ship in Tarentum. Thucydides reports (3.86.4) that the aim of the first Athenian expedition to Sicily in 427 BCE was to disrupt the transport of Sicilian grain to the Peloponnese.¹⁴⁴ Corinth used this grain for local consumption but also for export to its neighbors.¹⁴⁵ Corinth could export wool, bedclothes (Ath. 27D = Antiphanes fr. 236 Edmonds), textiles, roof tiles and architectural terracottas,¹⁴⁶ as well as the surplus of its own agricultural production and of its neighbors, olive oil, wine and the apples from Sidous (Ath. 82a–c).¹⁴⁷ Corinth may have also exported perfumes¹⁴⁸ and, on a less significant scale, bronze objects of various kinds.¹⁴⁹ From the fourth-century building accounts from Epidauros and Delphi we learn that Corinthians were also involved in the stone and timber business.¹⁵⁰ Most significant of all: silver in the form of Corinthian coinage was a sort of commodity that the city could use to buy the surplus production of cities in Southern Italy and Sicily.¹⁵¹

The influence of the Corinthian standard may be seen in the adoption either of the standard itself or of reduced versions of it. The adoption of the Corinthian standard and types by colonies of Corinth in Western Greece may have been voluntary and not dictated by Corinth, the mother city. For instance, Potidaea, the only Corinthian colony in the North, with strong ties to the *metropolis*, issued earlier in the late sixth and early fifth century a coinage on the Euboic standard with its own types.¹⁵² The coinages of the Corinthian colonies that were minted on the Corinthian standard and with Corinthian types during the fifth century BCE,¹⁵³ the well-known Pegasi, served to finance common military operations of Corinth.¹⁵⁴ Pegasi were issued by Leucas around 480, while the first issues of Ambracia shared reverse dies with Corinth, which points to their having been produced in Corinth ca. 480/79. The choice of the denomination sheds light on this unusual situation. Corinth issued an important number of fractions,¹⁵⁵ whereas fractions are rather rare in its colonies.¹⁵⁶ Epidamnus and Potidaea issued in the mid-430s silver coins with Corinthian types. The production of Pegasi by Anactorium, Leucas and Ambracia might have also served the needs of the war against Corcyra.¹⁵⁷

After the mid-fourth century BCE, the Corinthian colonies of western Greece, Leucas, Corcyra, Argos Amphilochicum, Apollonia, Dyrrhachium, Anactorion and Thyrrheion issued Pegasi partly to support Timoleon's efforts to re-establish democracy in Syracuse, impose peace and populate a devastated Sicily with Greeks (Kraay 1976). As a recent study has shown, the most significant part of these Pegasi served to facilitate the grain trade with Sicily during periods of shortage.¹⁵⁸ Because these Pegasi were issued primarily to facilitate large-scale international trade, fractions are completely absent.

We need now to turn to Corcyra, Corinth's rebellious colony.¹⁵⁹ Corcyra minted its coinage with its own types on a standard that derives from the Corinthian.¹⁶⁰ The stater of Corcyra is 11.4 g and therefore equivalent to four

Corinthian drachms or to a reduced Aeginetan stater. The Corcyrean stater is divided into halves, quarters, and so on. This standard was also adopted by the Ionian islands of Cephallenia and Zacynthus, which both lay south of Corcyra.¹⁶¹ Zacynthus is off the coast of Elis where the Aeginetan standard was used.

The creation of this standard by Corcyra needs to be explained in terms of its geographical position. Corcyra was the gateway to the Adriatic Sea and a key point for communications with the West.¹⁶² The island had all sorts of natural resources¹⁶³ and could exploit the rich resources of the coast opposite the island and develop a network of trade with this area.¹⁶⁴ The coinage of Corcyra did not travel far and in some cases has been found in hoards buried in Illyria, southern Italy and Sicily. On the other hand, coins from other cities are rarely found in hoards buried in Corcyra.¹⁶⁵ Like the wealthy Achaean colonies, Corcyra was a closed monetary zone.¹⁶⁶

From Corcyra, we cross the Adriatic Sea to southern Italy and Sicily. Because the Attic stater shared the same weight with the Corinthian one (8.6 g), the Attic tetradrachm had the weight of the Euboic stater (17.2 g) and the Euboic stater began to be divided into fourths before the end of the sixth century BCE, it is difficult to say which standard was adopted in areas dominated by the colonies of Chalkis and Corinth. These areas were Sicily and the Chalcidic peninsula.¹⁶⁷ What numismatists consider an Attic tetradrachm for cities of Sicily and the Chalcidic peninsula could be a Euboean stater, while Attic didrachms could also be seen as Corinthian staters or Euboean half-staters. This is proved, as far as the Chalcidic peninsula is concerned, by a silver coin issued with the types of Sermyleia, the weight of a Euboean stater/ Attic tetradrachm and the legend ΣΤΑΤΕΡ.¹⁶⁸ As far as Sicily is concerned, there is epigraphic evidence from Akrai of mid-fifth century BCE date.¹⁶⁹

The influence of the Corinthian standard was strong in Sicily, where Corinth founded Syracuse in 734 BCE. The Dorian colonies of Selinus and Acragas issued Corinthian staters and later Syracuse struck what could be considered as a double Corinthian stater or a Euboean stater (Attic tetradrachm).¹⁷⁰ These cities adopted the Corinthian standard to serve their own needs; these coins circulated locally, and it is the choice of the standard that reveals the impact of Corinthian merchant activity in this area. One recalls that these cities issued their coinages with their own types.

Sicily produced large quantities of grain but also clothing and other products as cheese and pigs.¹⁷¹ Euboean, Corinthian and Attic pottery has often been found in excavations in these areas and points to commercial relations with Mainland Greece. In Sicily three early hoards contained Attic tetradrachms; all other hoards with Attic tetradrachms are of much later date.¹⁷² In the Chalcidic peninsula there is only one hoard that might have contained Attic tetradrachms; its burial dates from the 420s (*CHVIII* 63).¹⁷³

Another hoard, this time from the excavations of Methone, might also be connected with military operations.¹⁷⁴ This makes it clear that Athenian involvement in these areas is not of early date and the first appearance of Athenians was connected with military operations. One recalls that Thucydides says that in 415 BCE the Athenians knew almost nothing about Sicily (6.1.1; cf. 6.46.3–5). Although Attic pottery arrived in Sicily and in Etruria, Athenian merchants were not involved in their transport. Trade in the Ionian and the Adriatic Seas was dominated at first by the Euboeans and later by the Corinthians. The Athenians arrived in Sicily quite late and against the historical background of the Peloponnesian War. Some scholars have thought that Sicilian coinages were minted on the Attic standard, but it is more likely that they were minted on the Corinthian and Euboean standards.

We find reduced versions of the Corinthian standard in the earliest silver coinage of Phleious, Pheneos and Cleonae,¹⁷⁵ neighbors of Corinth, the cities of Acarnania, situated very close to Corinthian colonies,¹⁷⁶ and of the Achaean colonies of Southern Italy.¹⁷⁷ Georges Le Rider explained the standard of the Achaean colonies of southern Italy with a stater of 8 g and peculiar features based on hoard evidence and on some overstrikes of Corinthian staters.¹⁷⁸ He showed that the aim of the adoption of a reduced version of the Corinthian standard was to create a closed monetary zone from which all other currencies were excluded. By requiring one Corinthian stater of 8.6 g for a local stater of 8 g, these cities made a profit of 7 per cent.¹⁷⁹ The resources of Sybaris, Metapontium, Croton and Caulonia are very well known: huge quantities of grain and leather from big animals, preserved fish and others.¹⁸⁰ Corinth could acquire the surplus of these Achaean colonies with its Corinthian staters, which these cities also used to strike their own coinages, as the overstrikes reveal. Thus, trade provides a good explanation for the movement of Corinthian staters to Southern Italy.

THE PERSIAN STANDARD

The Persian standard was introduced by Darius I, who first followed Croesus' standard (silver stater of 10.75 g, gold stater of 8.06 g), and later adopted a weight of 8.36 g for the gold stater (*dareikos*) and 5.5 g for the silver stater (*siglos*).¹⁸¹ This standard was popular in areas with strong ties to the central government of the Persian Empire and its subordinates such as the cities of Cilicia, Pisidia and Pamphylia.¹⁸² From ca. 380 BCE, Persian governors of Cilicia, such as Tiribazus, Pharnabazus, Datames and Mazaeus, issued double *sigloi*.¹⁸³ Tiribazus' staters may have been used to pay soldiers during his campaign against Evagoras of Cyprus. The double *sigloi* of Pharnabazus and

Datames were minted for their campaigns against Tachos, the rebellious satrap of Egypt.¹⁸⁴ In the late 360s, Datames issued two series of silver staters (double *sigloi*) during his revolt against the Great King.¹⁸⁵ Datames' successor, Mazaeus, also issued double *sigloi* with his name and titles.¹⁸⁶ The city of Lampsacus in Mysia issued gold staters on the Persian standard that supplemented the royal currency in international payments.¹⁸⁷ Mallos in Cilicia issued double silver *sigloi* under Artaxerxes III. Gold staters with the weight of a daric depicting an archer and a galley might have served as payments for the royal fleet.¹⁸⁸

The adoption of the Persian standard may be explained in two different ways, both related to geography. We have two distinct zones where the Persian standard was adopted. The first includes the northern and southern coasts of Asia Minor, and the second is Ionia. During the fourth century BCE loyal (and disloyal) satraps and subject cities issued their coinages on this standard because they had to meet expenses related to armies mobilized by or against the Great King. From Xenophon we learn that the monthly payment of mercenaries under Cyrus was one daric, and later Cyrus offered his mercenary soldiers one and a half darics. One daric was the equivalent of twenty *sigloi*, and one *siglos* of seven and a half Attic obols (Xen. *An.* 1.5.6). The silver coinages on the Persian standard issued by Amisos and Trapezous can be explained in the same way. One recalls that Datames' military involvement in this area is revealed by combined information from Ps.-Aristotle (*Oec.* 2.2.24a) and Polyaeus (*Strat.* 7.21.1).

A different explanation might be proposed for the Ionian cities of Ephesus and Colophon. These cities adopted the Persian standard, since this was the successor of the Lydo-Milesian standard.¹⁸⁹ The ties of these cities with the Persians and their commercial relations with them may have had some influence on their choice of standard.¹⁹⁰ The other Greek cities of Western Asia Minor did not use the Persian standard. Ephesus and Colophon had another common point besides the Persian standard: they were both excluded from the celebration of the *Apatouria*, a common festival for all cities of the Ionian Dodecapolis.¹⁹¹

Two distinct reduced versions of the Persian standard were adopted in Lycia.¹⁹² Tissaphernes also issued silver staters on this local Lycian standard during the years of the war against Agesilaus of Sparta.¹⁹³ Another version of this same standard was introduced in Cyprus with a *siglos* of 11 g.¹⁹⁴ The standard of the coinage of the Great King remained unchanged to the very end of the Persian Empire.¹⁹⁵ This is a reflection of stability and refers to the adoption of the Persian standard for political and military reasons. By contrast the Greek cities and the colonies occasionally changed their weight standards.

CHANGES OF STANDARD

Mainland Greece and the North

The reduced Milesian standard of the earliest silver and electrum of the Chalcidic peninsula was abandoned, and some of the cities that previously issued on this standard, Torone, Sermylea and Argilos, changed to the Euboic-Attic standard.¹⁹⁶ This must be explained either by the impact Athenian tetradrachms had in international trade or by the links of the Euboean colonies with the Euboean standard. The Milesian was the earliest monetary standard, and after a period of experimentation the cities changed to their own *nomima*. In this same area some decades later the military help with which Perdiccas II provided the enemies of Athens during the *Poteidaia* brought his silver sixths (tetrobols) into the area and had an influence on local coinages.¹⁹⁷ His allies adopted the Macedonian monetary practices in their efforts to meet military expenses. Thucydides (4.83.5–6) explicitly says that Perdiccas and his allies had to pay for the soldiers of Brasidas. These allies were the Chalcidians of Thrace and later Acanthus.¹⁹⁸ Down to the sack of Olynthus in 348 BCE this standard dominated monetary circulation in the Chalcidic peninsula and was also adopted by Amphipolis and Philip II.¹⁹⁹

Thucydides (2.100.2) informs us that king Archelaus of Macedonia introduced many innovations.²⁰⁰ He introduced staters of ca. 10.7 g (10.20–10.90 g), being the equivalent of five light tetrobols (2.15 g).²⁰¹ By the adoption of a lighter standard than that of his neighbors, the cities of Thessaly and the Chalcidic peninsula, and of his main commercial partners, the Athenians, the king created a currency and a closed monetary zone for his kingdom.²⁰² The only hoard of staters from early fourth-century Macedonia contained staters of the Macedonian kings from Alexander I to Amyntas III and no other currencies (*IGCH* 365 from Ptolemais, Macedonia).

Two changes in the weight standards of coins minted by the Euboean cities are probably connected to shifts in military alliances. After 371 BCE the Euboean cities adopted the Aeginetan standard used by the Boeotians, as a result of their new alliance with Thebes.²⁰³ In 357 the Euboeans brought up their ties with Thebes and became the allies of Athens. The Euboean cities passed then to a reduced Attic standard. The alliance with Athens may be of some significance as it involved the arrival of Athenian currency in Euboea and also military collaboration.²⁰⁴

The adoption of the reduced Attic standard in Euboea is almost contemporary with the introduction of new coinages on the same standard by the Cycladic islands. This reduced Attic weight remained the standard in use down through the Hellenistic period.²⁰⁵ The circulation patterns of these coinages show that they did not leave the wider area where they were produced. This

reflects local economic patterns.²⁰⁶ During the Hellenistic period their coinages could be exchanged with some profit with the various international currencies on the Attic standard.

Asia Minor

The main innovation in Asia Minor before the arrival of Alexander III was the adoption of the Chian standard by a large number of cities. The financial support provided by Chios to the Spartans is attested by Thucydides (8.101.1). A number of coinages on the Chian standard were issued by cities that supported Lysander during the last years of the Ionian war. These are the well-known ΣΥΝ coinages depicting a baby Heracles strangling snakes on the reverse and civic types on the obverse.²⁰⁷ The ΣΥΝ staters were tridrachms on the Chian standard and double *sigloi* on the Persian. This 'was particularly significant to Lysander, on account of the huge subsidies he received from Cyrus from 406 onwards.'²⁰⁸ Thus, the production of Chian weight coinage started from a 'strong nucleus of major Greek cities,' spread to the Hecatomnid dynasty in the early fourth century BCE and then to the majority of Greek cities in Thrace, Bithynia, Mysia, Troas, Aeolis, Ionia and Caria, but also in Paphlagonia and maybe Lydia. Silver on this standard was also struck by satraps and subordinates of the Great King for use in military payments.²⁰⁹

Although the Chian standard began to be adopted for military and political reasons, one cannot explain the spread of the new standard in the same way. The cities of Asia Minor were all subjects of the Great King after 387 BCE but were free to develop their own monetary policy. The cities that adopted the Chian standard in this period appear to be linked by trade and not by political ties. As has been recently shown, this was the standard that was also adopted by the islands of Rhodes and Cos, as well as by a number of cities in Thrace such as Thasos, Ainos and Byzantium.²¹⁰ These cities were not subjects of the Persian king and had no political links with the cities of Asia Minor. The monetary union of Byzantium in Thrace and Calchedon in Bithynia on the opposite coast points also to an explanation involving trade and joint commercial activity.²¹¹ These two cities, which were both Megarian colonies and were situated at the entrance to the Black Sea, issued their silver coinages on the same standard and with very similar types from the end of the fifth century BCE. The adoption of the Chian standard by many mints that issued coinages during the fourth century BCE is best explained by large-scale transactions for long-distance trade.

It was during the last decades of the fourth century BCE that the Persian weight standard was adopted by a number of mints: Amisus and Trapezous of Pontus, Astacus, Calchedon, Cios and Heraclea Pontica in Bithynia.²¹² Lampsacus adopted the full Persian standard for its gold and silver coinages.

Perinthus in Propontic Thrace, the Thracian Chersonnese, a significant number of cities in Mysia, Parion and the less significant cities of Atarneus and Pergamon, Antandros and Gargara in the Troad, and also Ephesus in the late 330s adopted the Persian standard.²¹³ Byzantium might have followed Calchedon, as the two Megarian colonies struck their earlier silver coinages with very similar types on the Chian standard.²¹⁴ A lighter version of the Persian standard occurs in the Tauric Chersonnese (Nymphaion, Chersonnesus, Panticapaeum, Theodosia and Phanagoria) during the late fourth century BCE.²¹⁵ The Persian standard became popular again during the very last years of the fourth century BCE with the coinages of Alexandria Troas, Abydos, Mytilene and Scepsis.²¹⁶

Le Rider explained this change as the result of increased military activity under Artaxerxes III.²¹⁷ This may be the best explanation for the coinages of the cities of Asia Minor that were under the control of the Great King from 387 BCE. When Alexander III crossed the Hellespont and needed to meet military expenses, some of these cities may have issued coinages on the Persian standard. It might have also been the case under Lysimachus.²¹⁸ During the third century BCE a number of civic coinages were issued on this standard.²¹⁹

CONCLUSION

The adoption of a standard or the change to another standard may be caused by one of four factors:

1. Two or more cities may adopt a common standard to facilitate trade and to expend markets. The Aeginetan, the Milesian and the Phocaic standards provide examples of this phenomenon. In the areas where coinage(s) of a certain standard largely circulated and some significant cities also issued their coinages on this standard, all other cities tended to adopt this weight standard. This was the case of the Chian standard in Asia Minor and Thrace during the fourth century BCE. In some cases, cities adopted a reduced version of the standard in use with the aim of creating a clearly defined monetary zone where no other coinages circulated.²²⁰ This was the case of the Achaean colonies of Southern Italy.
2. Military involvement. In this case, coinages of different issuing authorities are minted in the same standard and they also share types. When cities had to collaborate to provide military help, they either followed their leader in terms of monetary standard and types (Corinth and colonies) or introduced new types (the ΣΥΝ coinage on the Chian standard). It might be that they issued their coinage with the weight standard of their ally but with their own types, as the allies of Perdiccas II in the Chalcidic peninsula, and Samos as an ally of Athens, in the late fifth century BCE.
3. Weight and monetary standards were part of the city's life and one of its *nomima*. This is the reason, together with trade, that in many cases colonies adopted the

weight standard of the metropolis but preferred their own types.²²¹ This was the case of the Corinthian and Euboean colonies in the Chalcidic peninsula and Sicily, Phocaea and its colony Velia in southern Italy, as well as Massalia and Empurias. The foundation of colonies involved trade activities of the metropolis with the area where the colony was founded, and with the colony before its decision to strike its own coinage.

4. Political control of an area can impose the adoption of a monetary standard.²²² This might be the case of Delos and Athens in the Archaic and Classical periods and was certainly the case of the Ptolemaic kingdom from the early third century BCE, as well as of Cyprus, Phoenicia and Cyrenaica.²²³ One also recalls the ties of a number of cities of Cilicia and Pamphylia with the Great King and his subordinates or local dynasts combined with military and other obligations towards them.

The adoption or the change of a coinage's weight standard was a deliberate decision made by the issuing authority, that is, the city-state or monarch. As we have seen, this decision was often made for commercial reasons and therefore reveals the existence of a trade policy. This policy was aimed not only at securing the import of a few essential items; a common weight standard facilitated the flow of both exports and imports. Common weight standards also played a major role in reducing transaction costs for merchants moving their goods from one city to another. As it has been recently shown by Alain Bresson also for electrum, electrum coins issued in three standards (Lydo-Milesian, Phocaean and Euboic) are grouped in hoards per standard. Combined with the mid-fourth-century BCE anecdote about Persinos (Callisthenes *FGrHist* 124 F 4: *apud* Poll. 9.93.4–9), this points to low transaction costs within the zone of its standard.²²⁴ The use of common weight standards thus helped to create the necessary infrastructure for the expansion of markets and to lay the foundations for economic growth in the ancient Greek world.

NOTES

- 1 See Bresson 2009.
- 2 Gold coinages were rarely issued in the Greek world before the Hellenistic period, while bronze coinages have no place in a discussion about weight standards and international trade. For the gold Greek coinages before the Hellenistic period, see the *synthesis* of Melville-Jones 1999. For bronze coinage and its use in every day life and local transactions, see Psoma in Psoma *et al.* 2008: 243–54; Marcellesi 2010.
- 3 Kroll 2001; 2008.
- 4 See Le Rider 1989; Psoma forthcoming a.
- 5 Kraay 1976: 329–30.
- 6 For Mainland Greece during the Archaic and Classical periods, see Psoma 2011a. For Western Asia Minor, see Meadows 2011. For the Hellenistic World, see Ashton 2012.
- 7 See discussion later in the chapter. These were the so-called Achaean of Southern Italy, that is, a reduced version of the Corinthian; the Campanian standard that adopted a more reduced version of the Achaean and derived from the Phocaic; the Corcyraean that was

related to both the Corinthian and the Aeginetan standards; the standard of the coinages of Cyprus, which could also be considered either as Persian or as a reduced version of the Aeginetan; the Lycian that may be a reduced version of the Persian; and the Samian and the Phoenician, which were merely of local character. Last but not least, we will see the so-called Thraco-Macedonian standard, 'the extremely complicated weight system of northern Greece': Kraay 1976: 330. On this standard, see Psoma forthcoming a.

- 8 See previous note as well as the discussion later in the chapter.
- 9 Pfeiler 1966; Moucharte 1984; Becker 1988.
- 10 Konuk 2011.
- 11 For fourths (drachms) and obols of Milesian standard, see Barron 1966: 9 with a reference to small fractions of Colophon with inscriptions: Milne 1941: 32–3, nos. 2–10.
- 12 For Ephesus, see Karwiese 1995. For Samos, see Starr 1966: 9–11.
- 13 Nicolet-Pierre 2006: 52–4. For Ialysos, see Weiss and Hurter 1998. The stater of Ialysos is between 14.45 and 14.95 g. Rare one-third staters and smaller fractions were also issued. See also the discussion about the weight standard, *ibid.* p. 8–9 and *ibid.* Appendix IV p. 13 for an attribution to Ialysos of staters of the same weight with a palmette (= Bresson 1981). For Lindos, see Cahn 1957.
- 14 For the cities of the Chalcidic peninsula, see Hardwick 1998; Liampi 2005; Psoma, forthcoming a. For Melos, see Sheedy 2006: 58–71.
- 15 Konuk 2011.
- 16 There is Ionic influence also in the dialect and the names of the months of Halicarnassos. See Trümper 1997: no. 96, 113–14.
- 17 Panagou 2010.
- 18 For Cnidos, see Cahn 1970. Fish, cereals, onions, cabbages, honey, wine and vinegar, carobs, pottery, pod and pharmaceutical brya.
- 19 *IGCH* 1165, 1168+1637, 1195, 1196, 1199, 1205, 1482, 1644, 1792.
- 20 Psoma forthcoming a.
- 21 Psoma forthcoming a.
- 22 Psoma forthcoming a. Argilos issued also *hektai* (2.46–2.40 g) and forty-eighths of the stater (0.40–0.25 g). For the division in sixths, thirty-seconds and forty-eighths, see Liampi 2005. It has been shown that the thirty-sixths and the forty-eighths are one and the same denomination: W. Fischer-Bossert, *SNR* 86 (2007) 184–8. The reason Argilos adopted the Milesian standard and its division in sixths, twelves etc. was because the city was in the vicinity of the so-called Thasian Peraea where the duodecimal system was followed. Later, in the fourth century, Amphipolis, which adopted the weight standard and numismatic habits of the Chalcideans of Thrace, struck drachms of 3.4 g under the influence of Neapolis and Thasos. The silver coins of Amphipolis and Thasos circulated together as reveals *CH IX* 18 from the cemetery of Gazoros with a burial date early in the fourth century BCE. For this hoard, see Poullos 2009.
- 23 Psoma forthcoming a.
- 24 Psoma forthcoming a.
- 25 For the control of the mines by Alexander during this period, see Kagan 1987; Psoma 2002a; Picard 2006.
- 26 Kroll 2011: 27–38.
- 27 Bacchylides 3.15–16. For hoards from Egypt with silver of Alexander I, see *IGCH* 1182, 1482, 1790.
- 28 Thuc. 2.99.
- 29 For the wine production in the Chalcidic peninsula, see Papadopoulos and Paspalas 1999.
- 30 See previous note.
- 31 Panagou 2010.
- 32 *AEMTh* – 2011 (passim)
- 33 See also Liampi 2005: 240–1.
- 34 Suda s.v. Χρυσὸς Κολοφώνιος.

- 35 Plut. *Mor.* 298A3–B6.
- 36 Sheedy 2006. Cf. Sheedy 2012: 110, 112.
- 37 Sheedy 2006: 58–71; Sheedy 2012: 112.
- 38 For Paros, see Hdt. 5.30 to 31. For Naxos, see Polyanius *Strat.* 8.36.1.
- 39 Panagou 2010.
- 40 Kraay 1964; Sheedy 2006: 6–71; 2011, 114.
- 41 Sheedy 2012: 112.
- 42 See Babelon 1901: 356–61.
- 43 Hurter-Mani and Liewald 2002; 2004; 2006.
- 44 This might also be the earliest standard of electrum and silver of Teos: Matzke 2000. For the coinages of Phocaea and Mytilene, see Bodensiedt 1981. For the Cyzicene staters, see Touratsoglou 1999. Small fractions, mainly *hemiekta*, were issued by Cyzicus from the late sixth century BCE. For these, see Hurter-Mani and Liewald 2006.
- 45 For the hoards, see Hurter-Mani and Liewald 2004: 30–1. For the decree of Olbia, see *IK Kalchedon* 16, the analysis by Dubois 1996: 28–38 no. 14 and the comments of Ph. Gauthier in *BullEpigr* 1997: 420.
- 46 For these testimonia, see Psoma forthcoming c.
- 47 For Tenedos, see Head 1911: 550.
- 48 As the stater of Ainos was the equivalent of three sigloi, this standard was considered Persian: May 1950: 265–9 with previous bibliography and discussion (see 269–71 for the Chian standard). However, at the date of the beginning of silver coinage at Ainos, the Persian standard was not popular in North-Western Aegean. We also remind that sigloi, coins of 5.5 g, were never issued by Ainos. At Ainos the stater (16.5–16.2 g) was divided in *hektai* (2.80–2.70 g) and *hemiekta* (1.35–1.25 g), while fourths, i.e. drachms (4.10–3.90 g), were also issued: Psoma 2002b: 518–19; forthcoming b.
- 49 Papadiamandis, the very significant Greek author of the late nineteenth–early twentieth century CE, from Sciathus, very often speaks about life on his island. From what he says we can infer that goat cheese of Ainos was a significant commodity in the Aegean.
- 50 Rutter 2012: 130. For Poseidonia, see Ebner 1964. For Velia, see Williams 1992.
- 51 See García-Bellido 1994.
- 52 Rutter 1979: 8–41, 123–41; Rutter 2001 *et al.*: 66–7 (Kyme); Rutter 1979: 42–59, 165–239; Rutter 2001 *et al.*: 68–71.
- 53 Pau Ripolles 2013: 3.
- 54 Graham 1964: 125, 128–35.
- 55 Both terms are mentioned in Archaic and Classical inscriptions of Chios: Meiggs-Lewis no. 8; Sokolowski 1969 no. 116; *SEG* 19: 575; *SEG* 17: 377; *SEG* 22: 497, 498, 501, 508; Sokolowski 1969 no. 118; *SEG* 18: 334. For the coinage of Chios during the Archaic and the Classical periods, see Hardwick 1991.
- 56 Psoma forthcoming a.
- 57 Skarlatidou 2010: 361. Clazomenian pottery is abundant in the oldest Clazomenian phase of Abdera: Koukouli-Chryssanthaki 2004: 241; Skarlatidou 2004: 249–59; Skarlatidou 2010: 255–304.
- 58 The drachms of 2.6 g were in fact the fortieth part of a Gold Daric of 8.35 g with a ratio of 1/12.46, close to 1/13, the usual ratio in the Achaemenid Empire and neighboring areas during the Classical period. See Hardwick 1996.
- 59 Barron 1966: 7–11.
- 60 Barron 1966: 210, plate XXII1c, 1e; Karwiese 1980; Meadows 2011: 288.
- 61 Barron called it Rhodian: Barron 1966: 105; Meadows 2011: 286.
- 62 During this same period Samos issued Alexanders (Price 1991: no. 2446A). One recalls that other cities that desired to have their own monetary policy during this period issued silver coinages on the Persic standard: Kinns 2006: 37; Ashton 2007.
- 63 See Nicolet-Pierre 2000.
- 64 Kroll 2001. For the Attic standard, see Kroll 1998.

- 65 Kroll 2001.
- 66 For epigraphic evidence, see Psoma 2009: 173 with notes 28–30.
- 67 See Psoma forthcoming a.
- 68 *CID* 2: 4 III 28; 2: 12 II 23, 25.
- 69 Kroll 2001. For Corinth, see Puglisi 2000.
- 70 For the coinages of the Peloponnese, see Walker 2006 with bibliography and discussion. For Messene, see Grandjean 2003. For Achaea, see Psoma and Tsangari 2003; Mackil and van Alfen 2006. For Sicyon, see Warren 2009. For the fifth-century BCE Arcadia, see Williams 1965; Psoma 1999a. For the neighbors of Corinth, see *infra* note 153.
- 71 For Delphi, see Svoronos 1896. For the fourth-century BCE Amphictyonic coinage, see Kinns 1983. For Phocis, see Williams 1972. For Boeotia, see Psoma and Tsangari 2003. For the Oitaioi, see Valassiadis 2004. For Lamia and Malis, see Georgiou 2004. For the earliest coinages of Larissa, see Kagan 2004. For Thessaly during the fifth century BCE, see Liampi 1996; Papaueangelou 1998. For hoards buried in Thessaly, see Psoma 2011a: 66–7. For the Cycladic islands and Crete, see Sheedy 2011: 109–14, 117–20.
- 72 Cnidos, Chersonnesus, Caunos, Cindya in Caria (or Telmessus), the Carian island of Cos, the city of Camiros on Rhodes and Mylasa. For Cnidos and Chersonnesus, see Cahn 1970. For Caunos, see Konuk 1998. For Cindya, see Kagan and Kritt 1995 and for an attribution of these same coins to Telmessus, see *SNG Kayhan* 810. For Camiros, see Cahn 1957. For Mylasa, see Konuk 2000: 172; 2007: 472–3. To these may be added some *incerti* that were recently attributed to Caria: see Sheedy 1998. Cyme of Aeolis and may be Gargara in the same area have also issued a coinage on the Aeginetan standard. One recalls that Demodike of Cyme together with Pheidon of Argos were thought to be the first who struck a coinage (Pollux 9.83). For Teos, see Kinns 1989: 187 with note 26.
- 73 Istros, Olbia and Sinope in the Black Sea also adopted it. For Istros, see Preda 1975. For Olbia, see Hind 2007: 12–14 with bibliography. For Sinope, see Hind 1976; 2007. For an opposing view, see de Callatay 2007.
- 74 For Kindya, see Kagan and Kritt 1995.
- 75 For flowers from which perfumes could be produced, see Theophr. fr. 4.27. For local pottery, see Poll. 7.197: τὴν δ' Αἰγίαν χυτρόπωλιν ἐκάλουν; Steph. Byz. s.v. Γάζα.
- 76 Str. 8.6.16.
- 77 To slave trade points also the information given from Theopompus about Pythonike, the mistress of the Macedonian Harpalus: Ath. 2.119.
- 78 Kroll 2011.
- 79 Scholia in Pind. *Ol.* 8.29b.
- 80 Figueira 1981 based on Hdt. 9.76.
- 81 Figueira 1981.
- 82 To the significance of Aeginetan currency in the Peloponnese point also the traditions about Pheidon of Argos: see Kroll 2001.
- 83 For Elis, see Walker 2004. For Thessaly, see Psoma 2011a: 66–7a.
- 84 Le Rider 1966; Stefanakis 1999.
- 85 Sheedy 1997. See also *IGCH* 6 that contains silver coins of Aegina, Ceos, Paros, Siphnos, Cos, Chios, Thera [?], Chios and Dardanos. The presence of silver coins on the Aeginetan standard either of Mylasa or Caunos in hoards buried on Thera (*IGCH* 7) and Melos (*IGCH* 8) points to the same direction.
- 86 See Sheedy 1997: 116–17.
- 87 For Cos and Camiros, see Nicolet-Pierre 2006: 50 with bibliography. For the other two cities, see Cahn 1970.
- 88 For this hoard, see Kagan 2011: 235–6.
- 89 Panagou 2010. Caunos was famous for its figs (Ath. 2.1.4). At Teos, in Ionia, whose earliest coinage was issued also on this standard, a reduced version of it was adopted: see Matzke 2000.
- 90 Chevillon and Fournials 2012.

- 91 Wiemer 2010: 418 with note 17.
- 92 Konuk 1998.
- 93 Panagou 2010.
- 94 For Teos, see Balcer 1968: 17–18; 1970: 25–34. See also Matzke 2000.
- 95 Hurter and Pászthopy 1984.
- 96 Hind 1976. Doubts for this attribution were cast by de Callatay 2007: 1–8 with previous bibliography in note 2. This is traditionally attributed – *à tort* – to Sinope.
- 97 For Olbia, see Avram *et al.* 2004: no. 690. For Istros, see Hind 2007 with note 12. The earliest silver coinage of Theodosia was also on the Aeginetic standard: see Kovalenko and Molchanov 2005. For relations between Olbia and Sinope, see Dubois 1996: 5–6 no. lines 15–17 with note 5. The eagle and the dolphin of the reverse of these coinages referred to Zeus Ourios, whose sanctuary was at the southern entrance of the Black Sea: see Hind 2007. For the sanctuary of Zeus Ourios, see Avram 2004: 981; Moreno 2008.
- 98 For Istros, see Avram *et al.* 2004: no. 685. For Olbia, see *ibid.* no. 690.
- 99 Hourmouziadis 2011: 211–12 with previous bibliography.
- 100 Ath. 2.2.119. For the attribution of this coinage to Sinope, see above notes 73 and 96.
- 101 See also Xen. *An.* 4.8.22 for Trapezous in the land of the Colchians. Str. 2.1.39.
- 102 Steph. Byz. *Ethnica* 43 (Αἰγινήτης).
- 103 For a discussion of this evidence and previous bibliography, see Psoma 2006.
- 104 Kagan 2008.
- 105 Berge, Thasos, Galepsos, Neapolis and also Thracian tribes of the same area (Ichnaians, Orrescians, etc.) issued staters of c. 10 g and fractions on the duodecimal system. See Psoma forthcoming a.
- 106 Fournier and Hamon 2007: 358–63.
- 107 For the resources of Thasos, see Müller 2011.
- 108 *IGCH* 117 (ca. 480 BCE; Lycian-Pamphylian border); *IGCH* 1182 (460 BCE; Western Asia Minor); *IGCH* 1185 (450 BCE; Rhodes); *IGCH* 1252 (430 BCE; Southern Asia Minor).
- 109 Psoma 2011a: 68.
- 110 Psoma 2011a: 66–7, 72–4
- 111 For Messene, see Grandjean 2003.
- 112 See Gartland 2013. He proposes to date these coins in the 360s during the years Thebes built a fleet and had to meet significant military expenditure.
- 113 See Psoma and Tsangari 2003; Mackil and van Alfen 2006.
- 114 With the exception of the hoard of Taras (*IGCH* 1874) that included almost all known coinages of the late sixth century BCE, there are no other hoards with Aeginetan staters from these areas. The hemiobol of Aegina travelled to Auriol (*IGCH* 2352) most probably with the two Phocaeen trihemibols.
- 115 For Italy, see *IGCH* 1874. There are no hoards with Aeginetan coins from Sicily. For a hemiobol in the hoard of Auriol, see *IGCH* 2352.
- 116 Figueira 1981; Salmon 1984. Johnston 1972 has demonstrated that Sostratus dealt extensively in Attic vases in the west.
- 117 See Kroll 2001; 2008. A weight on this standard that dates from the seventh century BCE was excavated at Pithekoussai.
- 118 Doubts about the attribution of what is considered as the first series of the coinage of Chalcis were expressed recently by van Alfen 2009.
- 119 Cyme in Campania, Naxos, Zancle, Messana and Himera in Sicily (thirds = drachmas), Samos (electrum). For Cyme in Campania, see Rutter 1979: 8–41 and the catalogue in pp. 123–41. For Sicily, see Fischer-Bossert 2012: 143–50. Euboean colonies of the Chalcidic peninsula (Mende and Torone), and also Aineia. Aphytis, Scione, Potidaea, Sermylia, Acanthus, Stageira in the Chalcidic peninsula and Argilos in the north-east of the peninsula. For these coinages see Psoma 2000. One of the earliest coinages of the Chalcidic peninsula was struck on this standard: see van Alfen 2009. The cities of the Chalcidic peninsula issued staters and fractions following a mixed system. Fifths were issued only by an uncertain mint.

- Staters, sixths, twelves etc. could also be considered as tetradrachms, tetrobols, diobols etc. of the Attic standard. Half-staters were issued by Scione, Sermylia and Stageira. These could be either half-staters of the Euboic standard (Attic didrachms), or staters of the Corinthian standard. Acanthus issued drachms and Mende, Dikaia and Acanthus tritemora.
- 120 Van Alfen 2009 proposed the attribution of the early chariot staters and related fractions on the Euboic standard (*trite*, *hekte*), which were previously attributed to Chalcis, to a mint in the Chalcidic peninsula related to Chalcis. There are striking similarities with local coinages as far as the incuse square is concerned but no find spots in the area.
- 121 The presence of the earliest Athenian coinage, the Wappenmünzen (half-staters of the Euboic standard) and their fractions that were drachms (fourths), obols (twenty-fourths), half-obols and quarter obols in the earliest hoard buried in Euboea (*IGCH* 3), together with the Chalcidian coinage following the new denominational system, points to an earlier date for this change well before the end of the Wappenmünzen.
- 122 To contacts with Boeotia point also staters on the Euboic standard with the Boeotian shield on the obverse and the red X, another common point between the Boeotian and the Euboic scripts, that may refer to Chalcis: see Kraay 1976: 90 with note 4.
- 123 For Skyros and Peparethus: Balcer 1967; 1975; 1978. Both coinages date ca. 485–480 BCE.
- 124 Sheedy 2011: 110.
- 125 For the strong ties between these areas and Euboea more evidence is brought by the *Onomastikon*: see Knoepfler 2007 with all previous bibliography.
- 126 For Delos, see Hackens 1973.
- 127 For the Thracian Chersonese, see Kraay 1976: 158 and for Methymna, see Franke 1975.
- 128 Kraay 1976: 296–9.
- 129 For overstrikes, see Kraay 1976: 296.
- 130 *Phormophoroi* 68 (fr. 63 K–A).
- 131 For Apollonia, see Topalov 2007. For Mesambria, see Karayotov 1994.
- 132 They were parts of hoards that also contained silver of Parium: see Psoma 2011b: 152.
- 133 For the royal edict of Pistiros, see Loukopoulou 1999: 359–71.
- 134 Magnesia, Samos and Miletus: see Dengate 1989. Its fourth-century BCE coinage on the Attic standard might be explained with the help of [Arist.] *Oec.* 2.16. See Kinns 1989: 184–6.
- 135 Nollé and Wenninger 1998/1999 with previous bibliography.
- 136 Alram 2012: 72.
- 137 For Sigaeum, see Mitchell 2004: 1014.
- 138 Attica: *IGCH* 2, 5, 12, 14, 16, 33 (Megara); Euboea: *IGCH* 3, 9, 10, 39; *CH* II 20; *CH* IX 11; *CH* VIII 69. Cf. *CH* IX 17.
- 139 For Asia Minor, see Konuk 2011.
- 140 For Athenian imitations, see Flament 2003; 2005; 2007; 2011a and b; Buxton 2009; Gitler *et al.* 2009; Gorini 2009; Ponting *et al.* 2011; van Alfen 2011a and b; 2012 a and b.
- 141 See van Alfen, Chapter 12 in this volume.
- 142 Salmon 1984.
- 143 In Sicily, Italy and North Africa, and in smaller quantities in the Aegean. A different quality of Corinthian pottery was excavated in Etruria. The invention of the potter's wheel is ascribed to Corinth (Plin. *HN* 7.198).
- 144 For literary evidence about imports of corn, see Salmon 1984: 129. Cf. Polyaeus *Strat.* 5.13.1.
- 145 Cf. Xen. *Hell.* 7.2.17–23.
- 146 Salmon 1984: 120.
- 147 Cf. Thuc. 1.120.2.
- 148 Plin. *HN* 13.5. Cf. 21.40 and Plut. *Tim.* 14.3: Dionysius II, while in exile at Corinth, spent time in Corinthian perfume shops.
- 149 For literary sources about the quality of Corinthian bronze-work, see Payne 1931: 349–350.
- 150 Salmon 1984: 124.
- 151 Le Rider 1989.

- 152 Alexander 1953.
- 153 Leucas ca. 480 BCE, Ambracia from ca. 480/79, Epidamnus, Anaktorium and Potidaea between 436 and 433: Kraay 1976: 82–6; Kagan 1998. Ambracia participated in contemporary military operations against the Persians and later its Corinthian issues became occasional: Kraay 1976: 82. Epidamnus and Potidaea, together with Corinth, Leucas and Ambracia, provided money for the war against Corcyra and the Athenians, which may explain the Athenian sanctions on Potidaea: Kagan 1998: 163–73.
- 154 Kraay 1976: 86–9.
- 155 Puglisi 2000.
- 156 Kraay 1976: 82.
- 157 Kagan 1998.
- 158 MacDonald 2002.
- 159 Thuc. 1.25.4.
- 160 Nicolet-Pierre 2009 with previous bibliography.
- 161 For the coinages of Cephallenia and Zacynthus, see Head 1911: 426 (Cephalenia) and 429 (Zacynthus).
- 162 Str. 7.7.5: καὶ πάλιν ἄλλος Κασσιόπη, ἀφ' οὗ ἐπὶ Βρεντέσιον χίλιοι ἑπτακόσιοι στάδιοι· οἱ δ' ἴσοι καὶ ἐπὶ Τάραντα ἀπὸ ἄλλου ἀκρωτηρίου νοτιωτέρου τῆς Κασσιόπης ὃ καλοῦσι Φαλακρόν.
- 163 For the resources of Corcyra, see Psoma forthcoming c.
- 164 Arist. *Mir.* 839a.34–839b.8 ; Hsch. s.v.: Κερκυραῖοι ἀμφορεῖς.
- 165 Nicolet-Pierre 2009.
- 166 For Corcyra's wealth and early monetary policy, see Psoma forthcoming c.
- 167 There is one colony of Corinth in the Chalcidic peninsula, Potidaea, the most significant city during the Archaic period and with strong ties with the metropolis.
- 168 Evidence from a Euboic weight silver coin issued by Sermylia with the legend *stater* and from the mention of Acanthian staters in *IG I³ 383A* front. col. II fr. VIII lines 178–9. See Psoma 2001b.
- 169 *IGASM* V 78.
- 170 Fischer-Bossert 2012: 143–50.
- 171 Hermippus *Phormophoroi* 68 (*PCGV* 1986, fr. 63).
- 172 The early Sicilian hoards that included Attic tetradrachms are the following: *IGCH* 2065 (Messina, 489–479 BCE) (20 out of 36); *IGCH* 2066 (Gela, c. 485 BCE) (166 out of 1,076); *IGCH* 2071 (Monte Bubbonia, Gela, 475–470 BCE) (6 out of 338). All other hoards are of much later date.
- 173 For this hoard, see Tselekas 2009.
- 174 Gatzolis-Psoma forthcoming.
- 175 *The BCD Collection, LHS* 96, 8–9 May 2006, nos. 1597–8 (Pheneos), nos. 1309–13 (Cleoneae), no. 77 (Phleious).
- 176 Psoma 2007.
- 177 Le Rider 1989.
- 178 Le Rider 1989. The stater of these coinages was divided into thirds and sixths, another common point with the Corinthian stater.
- 179 With the adoption of this standard by almost all other cities of southern Italy during the fifth century BCE, this zone became larger and included all this area. The impact of this standard is reflected in the coinage of Thurii, the Panhellenic colony at the site of Sybaris and some other coinages that were all struck on a more reduced standard. At Taras the stater was called *nomos* and its weight was 7.8–8 g while the stater of Terina was 7.6 g. See Rutter 2001 *et al.*: 92–3.
- 180 Salmon 1984: 135.
- 181 Konuk 2011; Alram 2012: 64–5.
- 182 See also Troxell 1981.
- 183 Alram 2012: 76.

- 184 Alram 2012: 76–7.
- 185 Alram 2012: 77.
- 186 Alram 2012: 77.
- 187 Kraay 1976: 251; Alram 2012: 76.
- 188 Alram 2012: 72.
- 189 Kim and Kroll 2008: 57 with note 3. For the fourth century BCE, see Kinns 1989: 187–8. For Colophon, see Milne 1941.
- 190 See Rubinstein 2004: no. 844, pp. 1071–2 (Ephesus); 848, pp. 1078–9 (Colophon).
- 191 Hdt. 1.147–8.
- 192 Mørkholm 1964.
- 193 Hurter 1979.
- 194 For Cyprus, see Markou 2011. For Phoenicia, see Kraay 1976: 286–92.
- 195 For coinage in the Persian Empire, see Alram 2012.
- 196 See note 110 in this chapter.
- 197 For the presence of Perdiccas’ heavy tetrobols in hoards from Olynthus and the Chalcidic peninsula, see Raymond 1953; Psoma 2001a: 175–9.
- 198 Psoma 1997.
- 199 For circulation in the Chalcidic peninsula, see Psoma 2001a: 169; Tselekas 2011. For the adoption of this standard by Philip II and Amphipolis, see Le Rider 1977.
- 200 Archelaus issued a bronze coinage, a step further from the overvalued silver of its predecessors: see Psoma 1999b.
- 201 For the staters of Archelaus, see Price 1974 and Westermark 1993.
- 202 This coinage was for local use and circulated locally: see Psoma 1999/2000. Macedonian silver from the late fifth century BCE to Philip II is extremely rare outside the frontiers of the kingdom with the exception of the staters of bad alloy issued by Amyntas III that are present in hoard IGCH 370. The hoard found on the western part of the Chalcidic peninsula may be related to the military presence of Amyntas III in this area during the years of the Spartan intervention. Archelaus, who exported timber to the Athenians and was paid with silver by them, felt strong enough to introduce this innovation.
- 203 Picard 1979. Cf. *IG* XII 9, 7.
- 204 For the history of Euboea during this period, see Picard 1979.
- 205 Stefanaki 2010. The position of Stefanaki finds support in the studies of Reger 1994 and Tréheux 1992.
- 206 For a local economy in the Cycladic islands during the Hellenistic period, see Reger 1994: 49–82.
- 207 Meadows 2011. For the ΣΥΝ coinages, see Karwiese 1980.
- 208 Meadows 2011.
- 209 Alram 2011: 72–4.
- 210 Meadows 2004.
- 211 Le Rider 1963.
- 212 Meadows 2004.
- 213 See Meadows 2004: 55–6. For Abydos, see Robinson 1921: 13. For Ephesus, see Kinns in Ashton *et al.* 2002: 200.
- 214 Le Rider 1963: 11–61; Schönert-Geiss 1970; Le Rider 1971: 145.
- 215 See Anokhin 1980. For the Chersonnesus Taurica, see Kovalenko 2008: 39–45. Some fractions of this reduced Persian standard of the Black Sea – diobols, tetrobols and octobols – could also be considered as hemidrachms, drachms and didrachms of the Chian standard, which was very popular during the fourth century BCE for reasons we will explain later: Kovalenko 2008: 45.
- 216 Meadows 2004.
- 217 Le Rider 1963: 58.
- 218 Meadows 2004: 55.
- 219 Kinns 2006: 37, 39.

220 Le Rider 1989.

221 See the discussion in Graham 1964: 125f.

222 For Athens and Delos, see Chankowski 2008: 11–12 with note 13. See also Hackens 1973: 223.

223 For the Ptolemies, see Le Rider and de Callatay 2006.

224 Bresson 2009.

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THE LEGAL FOUNDATIONS OF ECONOMIC GROWTH IN ANCIENT GREECE

The Role of Property Records

Edward M. Harris

Then bear in mind that all men regard those agreements as having greater validity that are concluded with the approval of the state and are entered in the public records; and it is impossible for anything thus administered to be cancelled, either in case one buys some land from someone else or a boat or a slave, or if someone lends money to another person or frees a slave or makes a gift to someone.

Dio Chrysostom 31.51

The Peruvian economist Hernando de Soto has written eloquently about the importance of providing legal protections for the rights of ownership as a key factor in economic development. If the majority of the people cannot protect their assets through the legal system, they cannot participate in the legal arrangements that would allow them to use their assets to take advantage of their full economic potential. One of the most important protections the legal system can provide is the documentation that enables proprietors to prove and enforce their rights of ownership, in particular property registers. This permits owners to transform their property into capital and to participate in the market. As de Soto observes,

Any asset whose economic and social aspects are not fixed in a formal property system is extremely hard to move in the market. How can the huge amounts of assets changing hands in a modern market economy be controlled if not through a formal property process? Without such a system, any trade of an asset, say a piece of real estate, requires an

enormous effort just to determine the basics of the transaction: does the seller own the real estate and have the right to transfer it? Can he pledge it? Will the new owner be accepted as such by those who enforce property rights? What are the effective means to exclude the other claimants? In developing and former communist nations such questions are difficult to answer. For most goods, there is no place where the answers are reliably fixed. That is why the sale or lease of a house may involve lengthy and cumbersome procedures of approval involving all the neighbors. This is often the only way to verify that the owner truly owns the house and there are not other claims on it. It is also why the exchange of most assets outside the West is restricted to local circles of trading partners.¹

According to de Soto, the establishment of a formal property system brings with it six major advantages.² First, it fixes the economic potential of assets. When one records the ownership of a house or land in writing, one starts to think about the object as an economic asset. What was formerly viewed as a place to live or to grow crops becomes something which can produce value either as collateral for a loan or as equity that can be exchanged. Second, property records integrate dispersed information into one system. When ownership is not recorded in public documents, it is difficult to acquire information about assets. One has to search out owners and discover from neighbors what belongs to whom and what different rights to land exist. When this information is centralized in public records, it is much easier to access. Third, property records make people accountable. When someone who owns property that is not recorded breaks the law or does not abide by the terms of a contract, there is no way to locate his assets or place liens against his property. Property records make it possible to ensure that contracts are honored and that people obey the law.

Fourth, property records make assets fungible. As de Soto explains, 'If standard descriptions of assets were not readily available, anyone who wanted to buy, rent, or give credit against an asset would have to expend enormous resources comparing and evaluating it against other assets – which would also lack standard descriptions. By providing standards, Western formal property systems have significantly reduced the transactions costs of mobilizing and using assets.'³ Fifth, property records help to network people. By improving communication about assets to a wide range of people, these records serve to connect people into a larger network of economic relationships. This contributes to an increase in the specialization of labor, which in turn leads to more efficient production. Sixth, property records protect transactions. For instance, by assuring buyers that sellers have good title to the assets they are selling or by registering liens on property, a formal property system produces trust in

economic transactions so that people are more willing to move their assets in ways that enhance production.

Before we study the methods adopted by the Greek city-states to protect ownership and to provide documentation for property, it is necessary to discuss briefly the concept of ownership in the Greek city-states. Some scholars have claimed that the Greeks had a more flexible concept of ownership than the Romans;⁴ others have claimed that the Greeks had a concept of relative ownership, which differed from the Roman concept of absolute ownership;⁵ still other scholars claim that in Athens and other Greek cities property was not owned by individuals but by households and that the head of the household did not exercise the rights of ownership but held the family property in trust for future generations.⁶ All these ideas rest on a misunderstanding of the concept of ownership. In a seminal essay Honoré studied the definitions of ownership found in the laws of several modern states with very different legal traditions: those of the United Kingdom and the United States, which draw on the Common Law tradition; those of France, Italy, and Germany, which draw on the Civil Law tradition; and that of the former Soviet Union, which was built on Marxist views about property. In each case there was broad agreement that ownership is 'the greatest possible interest in a thing which a mature system of law recognizes.'⁷ Honoré did not limit his study to modern European and American legal systems; he also took into account work by anthropologists like B. Malinowski, whose field work demonstrated that communities with low levels of structural differentiation share the same basic conception of ownership. In all societies, owners enjoy the same basic rights over property. They can be divided into ten basic incidents: 1) the right to possess, 2) the right to use, 3) the right to manage, 4) the right to income, 5) the right to capital, 6) the right to security, 7) transmissibility, 8) absence of term, 9) prohibition of harmful use and 10) liability to execution.

Owners in ancient Greece certainly enjoyed all these rights over objects that belonged to them.⁸ Those who owned property in Greece had the right to exercise exclusive physical control over their property and to remain in control (right to possess).⁹ In Athenian law there was an action for ejectment, which an owner could use against those who occupied his property illegally.¹⁰ Athenian law also granted owners the right to arrest thieves caught in possession of stolen goods whose guilt was obvious (*ep'autophoro*).¹¹ Finally, owners were permitted to kill those who were caught breaking into their houses at night or attempting to carry away their goods provided the retaliation took place immediately.¹² In the law of Athens and other Greek communities, owners enjoyed the right to use and to manage objects belonging to them in any way they wished. For instance, an owner could live on his land and plant crops on it, or he could lease it to anyone he chose. When he chose to lease it, he could impose conditions about how it was to be used.¹³

An owner in ancient Greece had the right to harvest and either consume or sell anything grown on his land; if he rented his land to anyone, he had the right to collect the payment of rent (right to income).¹⁴ In the case of slaves, masters in Greece had the right to anything they produced (including the children of slave women). Those who owned property in Greece had the right to sell it and to keep all the proceeds from the sale (right to capital). Aristotle (*Rh.* 1.5.7.1361.a16–19) believed that the right to alienate by gift or sale was the distinguishing feature of ownership.¹⁵ The governments of the Greek city-states gave owners the right of security, that is, immunity from expropriations. At Itanos on Crete citizens swore an oath not to carry out a redistribution of land or a cancellation of debts (*SIG³* 526, lines 22–24). At Athens the incoming archon promised security of possession to all who held land (*Arist. Ath. Pol.* 56.2).¹⁶ In the terms of the League of Corinth there was a promise not to confiscate property, cancel debts or to free slaves for the purpose of insurrection (*Dem.* 17.15).¹⁷ When Hyperides proposed to liberate the slaves of Attica, he was brought to trial for proposing an illegal decree, which would have violated the rights of owners.¹⁸ Owners in Greek communities were able to exercise their rights over their property as long as they did not alienate it until they died and were able to bequeath it to whomever they wished (transmissibility and absence of term). The law of Athens recognized the principle that a man could leave his property to anyone he wished. There were of course restrictions on this right; in Athenian law legitimate sons had the right to inherit property unless they were disinherited (*Dem.* 20.102; 46.14; *Isae.* 6.9; *Hyp.* 3.7). The Athenians and other Greeks could also disinherit their children and bequeath their assets to whomever they wished.¹⁹ Finally, if a citizen of a Greek community did not pay a debt either to a private individual or to the state, his property could be seized to pay for this obligation (liability to execution).²⁰

Although the basic rights of owners do not change from one community to the next, rules about ownership can vary in different communities in respect to three issues: (1) Who is entitled to own? (2) What can be owned? (3) What are the restrictions placed on the rights of owners? At Athens and in other Greek communities, for instance, foreigners could not own land unless they were granted this privilege.²¹ At Athens, women and children were not allowed to conduct transactions worth more than a *medimnus* of barley.²² At Athens it was forbidden to own silver mines, which had to be leased from the state.²³ In the modern world it is against the law to own another human being as one's slave, but this practice was widespread in Greece throughout antiquity.

The laws of Greek communities also placed certain restrictions on the rights of owners in respect to the use of land.²⁴ In Attica it was forbidden to cut down sacred olive trees on private land.²⁵ Solon is reported to have enacted regulations that forbade the planting of olive or fig trees within nine feet of a neighbor's property and all other trees within five feet, as well as the construction

of walls within one foot and buildings within two feet of another man's land; beehives were to be placed at least 300 feet away from existing beehives (Plut. *Sol.* 23.6; *Dig.* 10.1.3). There appear to have been similar rules in Ptolemaic Alexandria during the third century BCE.²⁶ A stele from Thasos dated to the early fifth century BCE contains regulations for a road leading to the sanctuary of the Graces, which required inhabitants to keep the area in front of their houses clean and forbid them from pouring water from their balconies into the street.²⁷ A detailed set of regulations from Pergamon from the period of the Attalids places many restrictions on homeowners. Some concern the repair of party-walls; others require owners to keep cisterns watertight.²⁸ Even though the restrictions on owners may have varied from one community to another, the basic rights of owners were the same throughout the ancient Greek world. Greeks, like people everywhere, shared a common understanding of the concept of ownership. Without such an understanding, it would have been impossible for economic agents to negotiate with each other.

To protect the rights of ownership the Greeks realized that it was important to maintain public records.²⁹ In his *Laws* (741c, 745c-d) Plato proposes that officials inscribe the allotments of land on tablets of cypress-wood to create written records for future reference, and place them in the shrines. These allotments were to be permanent and could not be used as collateral to contract loans, but Plato also proposes that any property acquired beyond the original allotment, which could be alienated, should also be registered: 'All the property of every man over and above his allotment shall be publicly written out and be in the keeping of the magistrates appointed by law, so that law-suits pertaining to money may be easy to decide and very clear.' What is interesting to note here is the purpose of these records: they are not kept for tax purposes but to help decide lawsuits and to protect the rights of owners. Now of course, the state of Magnesia described in the *Laws* is an ideal state.³⁰ In his *Politics*, however, Aristotle was attempting to describe the standard features of Greek city-states in his own day. He says that one of the regular offices found in a community is one having responsibility for records about property: 'Another magistracy very closely connected with this one is the supervision of public and private properties in the city, to secure good order and the preservation and rectification of falling buildings and roads, and of the boundaries between different persons' properties, so that disputes may not arise about them, and all the other duties of supervision similar to these' (*Pol.* 1321b18-23). Once more, the purpose of these records is not to help the state to collect taxes but to make it easier to resolve disputes between individuals, in other words, to secure the rights of private owners. In another passage, Aristotle stresses the need to maintain records about legal relationships between individuals and court decisions, which could be used as evidence in court to prove title (*Pol.* 1331b6-11). An entry in the lexicon of Hesychius (s.v. ἐν λευκώμασι) reports: 'It was

customary to register pieces of land and slaves sold on white boards, and they wrote on tablets of box-wood smeared with white clay the names of the properties and the slaves and those who purchased them so that if anyone wished, he could safely make a charge when he saw the white board.' This gives the impression that the practice of keeping records of sales was widespread.

A famous fragment of Theophrastus shows that different communities in Classical Greece took differing approaches to the issue of publicizing and registering sales of land.³¹ At Athens there existed the practice of providing advance written notification of a sale, and the buyer might pay a tax of 1 percent (*hekatoste*) as a kind of registration fee. As Theophrastus says,

Some say that there should be advance written notification with a magistrate no fewer than sixty days before as at Athens and that the buyer should deposit one percent of the price so that whoever wishes to may raise a protest and lodge an objection and so that it may be clear by virtue of the payment who is the legal purchaser.

Any buyer who wished to have secure title would want to make sure that there were no outstanding claims on the land or others who contested the seller's ownership. For this reason the seller would publicize the sale sixty days beforehand to give others a chance to come forward and lodge an objection. If there were no rival claims, the buyer had some assurance that his title to his purchase would be secure. This would reduce transaction costs for the buyer, who would not have to collect information about the seller's title. Recent research in law and economics has noted that one of the greatest obstacles to market-exchange is the problem of asymmetrical information where one party has knowledge that the other lacks.³² If buyers do not have the assurance that the seller has good title to the land he is offering, the buyer will be less inclined to purchase, or will insist on a lower price to compensate for the risk he incurs. This procedure served to correct the imbalance of information and thereby to facilitate market-exchange.

To provide documentation, the *poletai* kept records of these payments, which provided the name of the seller, the name of the buyer and a brief description of the property.³³ The properties are called *chorion*, 'a catch-all term meaning "estate," "landed property," of any kind but not necessarily, agricultural land' or *eschatia*, which was 'outlying' property, that is, near the sea or near a frontier. As Lambert notes, 'there is the connotation that the land was, at best, marginally cultivable.'³⁴ The name of the deme in which the property was found is also recorded but with no further details. These records are clearly not similar to modern property registers, which are organized by place with each property given a set of coordinates on a grid. These are records of a tax paid for a sale and serve as accounts for magistrates, the *poletai*, who had to report on public revenues at the end of their term of office. But by recording that the payment

was made, these records provide evidence for conveyances, which could be used to prove title. They do not prove that the owner possessed title to a given property; they showed only that he had gone through a certain process before the sale. But evidence showing that the sale was legitimate helped to prove ownership. In case of a dispute, the owner could appeal to this record and the testimony of the *poletai*. Most importantly, the procedure helped to reduce transaction costs for buyers and imposed only a very low fee (1 percent of the purchase price) for registration.

It is interesting to note the residence of the buyers and the location of the properties in these records. As de Soto notes, in the absence of property records it is difficult to verify ownership; it often requires long negotiations with neighbors to discover the actual status of a given property. For this reason, in regions where there are no property records most exchanges of assets occur between neighbors.³⁵ The *poletai* records show, however, that property in Attica was often sold to those outside the immediate community. In his study of the *hekatoste* inscriptions, Lambert finds evidence for 144 sales of land.³⁶ In roughly half of these groups there is no information about the location of the property and/or the identity of the buyer. In the cases where we can identify the location of the property and the residence of the buyer (in at least twenty-three cases, possibly twenty-five), the buyer purchases property in his own deme. What is striking, however, is that in twenty-one cases the buyer comes from outside the deme where the property is found (see [Appendix I](#)). In a few cases the deme of the buyer is close to the location of the property. For instance, in two cases (#78 and #80) the buyer comes from the Piraeus and purchases land in Phaleron, an adjacent deme. But in most other cases the buyer purchases property that is in another part of Attica. In one case (#113) a buyer from the city of Athens bought property on Salamis. The case of the philosopher Plato is interesting in this regard: his deme was Kollytos in the city of Athens, and he acquired land for his Academy just outside the city (Plut. *Mor.* 603b; Diog. Laert. 3.20), but he also purchased land at Iphistiadaí near Kephisia, some distance from the city (Diog. Laert. 3.41). This evidence confirms de Soto's insight that records to prove title will result in the ownership of land circulating outside a small restricted circle.

The records of payment of the 1-percent tax were not the only documentation of sales. The *poletai* also kept records of properties that had been confiscated and sold to new owners.³⁷ The most famous example is a set of records for the property confiscated from those who were convicted of impiety during the affair of the desecration of the Herms and the parody of the Mysteries in 415.³⁸ These records do not give a helpful description of the land that is sold, but the records of the property confiscated from the Thirty in 403/2 BCE and sold are more informative.³⁹ There is the name of the person who reported the property with his demotic, followed by the verb 'reported' (ἀπείγραφεν),

followed by the property and the owner. The neighbors on the north and the south are given, then the name of the buyer and the surety who promises to pay the remaining amount of the price if the buyer does not. In the left-hand margin is the price of the property and the amount of the sales tax. This kind of document served several purposes. First, it was a financial document, which recorded the revenue gained by the state from the sale and from the sales tax. In this regard it served to keep public officials, the *poletai*, accountable.⁴⁰ It also recorded the name of the surety who pledged to pay the purchase price if the buyer did not. But the document also provided evidence of the owner's title. The method of describing the property is very crude (only the deme and the names of the neighbors), but it should have been sufficient to identify its location.

These two sets of records were not unusual: the *poletai* kept regular records of confiscated property. Another example comes from the year 367/6 and records the confiscation and sale of a house belonging to a certain Theosebes of Xypete located at Alopeke.⁴¹ These records are more detailed and give the deme of the property as well as its borders: a road leading to the sanctuary of Daedalus, the sanctuary itself and the neighbor to the south, Philippus of Agryle (cf. the detailed description of the boundaries of Plato's land at Iphistiadai [Diog. Laert. 3.41]). The evidence also confirms what we observed earlier: the inscription has two people from outside Alopeke who own property in the deme.

The records of the *poletai* were located at Athens, but there may have been other records located in the demes.⁴² It is striking that in the records of the property confiscated from those convicted in the affair of the Herms and the Mysteries in 415 BCE, the person who reported the property was the demarch.⁴³ When the Athenians decided that there would be property tax levied in 362 BCE, the members of the Council were to report who were the members of the demes and who owned property in the demes ([Dem.] 50.8). Soon afterward, Apollodorus was reported in three demes where he held property. The fact that the Council was able to determine who owned property and who did not strongly suggests that there were records they could consult. If they had had to walk around the entire deme asking owners and their neighbors who owned what, the process would have taken much longer. This passage also reveals another important aspect of records about property in Athens: there was no one central register, but many types of records in different places. Owners might also use court records about cases involving property or inheritance to prove title. All verdicts in private cases appear to have been kept on file and could be consulted as the need arose.⁴⁴

One should not exaggerate the amount of information available in these records. Because they record sales and are not property registers, they do not give

any information about liens on the property. For instance, when Demosthenes won a private suit for damages against his former guardian Aphobus, who did not pay him, Demosthenes went to seize some land belonging to Aphobus. Onetor, the brother-in-law of Aphobus, drove him away from the property, claiming that he had taken it from Aphobus who had not returned the dowry of his sister after he divorced her (Dem. 30.8). Demosthenes brought a suit against Onetor for ejectment on the grounds that Aphobus never provided Onetor's sister with a dowry and that the divorce was a sham (Dem. 30.4–5). There were apparently no written records to prove Demosthenes' allegations about the property: he produced witnesses to show that the dowry was not paid to Aphobus, which undermined Onetor's claim that his property was pledged as security. In another speech attributed to Demosthenes, the speaker recounts how his opponent Phaenippus in a lawsuit about a trierarchy, drew up an inventory of his property in which he stated that there were several debts made on the security of his farm at Cytherus. To refute this statement, the speaker does not cite public records but has two of the lenders testify that the debts were paid long ago (Dem. 42.26–29).⁴⁵ Yet it is striking in both cases that each litigant had no difficulty in locating the property owned by his opponent, who could not deny that the property belonged to him.

The records of sales also did not contain any information about the size of the property or its precise borders. When Phaenippus' opponent wished to discover the extent of his farm, he had to walk around it to determine its size (Dem. 42.5).⁴⁶ This implies that there were boundary-markers in place or physical features such as roads or riverbeds that clearly separated his property from that of his neighbors.⁴⁷ These boundaries may have been established by mutual consent or local custom and knowledge, but the state took a role in policing them. According to Aristotle (*Pol.* 1321b27–30), every state should have officials called *agronomoi*, who supervise boundary-markers. An inscription from fifth-century Chios provides regulations about *horophylakes* ('guardians of the boundary stones'), who obviously carried out this task.⁴⁸ Similar officials are attested at Miletus.⁴⁹

Even in cases where there were no written records, the Athenian legal system provided another means for owners to prove title. In Athenian law, the contract of sale imposed the duty of warranty of title on all sellers.⁵⁰ This meant that if one sold property to another person, then later a third party claimed that the property belonged to him and that the seller did not have title, the seller was required to support the buyer in court. If he failed to perform his duty, he could be sued for damages by a special private action called the *dike bebaioseos*.⁵¹ Even though there were many written records, much of the information about ownership still resided in the memory of local inhabitants. The Athenian legal system was, however, willing to accept this oral evidence in court and gave owners a legal mechanism to ensure that sellers provide the

necessary information to protect their title. The purpose of the written records of sales may not have been so much to prove the title of owners but to record the name of the seller so that he could not evade his legal duty to warrant the sale for the buyer. This duty of the seller was widely recognized throughout the Greek world; Athens was not unusual in this regard.⁵²

Because the transaction costs were low, it was easy for those who were less wealthy to protect their rights to the property they owned. This in turn made it possible for all owners of land, no matter what their economic position, to obtain credit. The evidence for this comes from the *horoi* placed on land that had been pledged as security for a loan or other obligation. The *horoi* are flat slabs of stone, which often give the name of the creditor and the amount of the obligation.⁵³ Their purpose was to warn third parties that there was a lien on the property and thereby to protect the rights of creditors. In the collection of *horoi* made by Finley and supplemented by Millett in 1985, there were 135 concerned with loans on real security. There are two kinds of expression used to indicate real security.⁵⁴ The median value of the loans using the *hypothēke* terminology is 750 drachmas, and that for the *prasis epi lysei* terminology is 1,100 dr.⁵⁵ For both groups the median is therefore around 1,000 dr. These are relatively low figures: we should keep in mind that those in the liturgical class, which was probably about 1,200 members of the citizen population in the fourth century, had at least three talents and probably more.⁵⁶ Probably over three-quarters of the male citizens in Attica owned property. There are also sixteen loans for 500 dr. or less. This reveals that even those with a small amount of land could still obtain access to credit. There is no need to think that the *horoi* are evidence of a crisis in the fourth century; the existence of large amounts of debt is only a problem when the debtors cannot repay their loans and default ensues. But there is no evidence in our literary sources for any such crisis in the fourth century. And any serious problems would have led to a lack of confidence, which would have resulted in a lack of credit.⁵⁷ On the contrary, the *horoi* indicate that there was no such crisis of confidence and withdrawal of credit: the *horoi* start to appear in the early fourth century BCE and continue into the third century, indicating that credit remained widely available.⁵⁸ This would appear to confirm de Soto's insight that the existence of property records that provide secure title to all owners makes it easier for those who are less wealthy to obtain credit. What is also striking is that approximately half of the creditors do not come from the districts in which the secured properties are found (see [Appendix II](#)).⁵⁹ This confirms the observation made about the *hekatostai* records: the existence of a formal property system helped to unite Attica into a single market for credit.

This development could not of course have taken place unless there were legal mechanisms in place to protect the rights of creditors. First, there were private actions to recover debts and to enforce other kinds of contracts.⁶⁰ What

was most important for the growth of credit was that Athenian law recognized that creditors who seized land that had been pledged as security were given secure title.⁶¹ A passage of Isaeus (10.24) lists three legitimate ways of proving ownership: first, one has received it as real security; second, one has bought it; or third, the property has been awarded as the result of a legal decision. Thus the lender who received a pledge of real security could take over the property in place of repayment of the loan. A passage of Demosthenes (41.7–10) reveals that there was another law that protected the ownership of property that had been obtained through real security against claims by the former owners.⁶² One should bear in mind that the transaction costs for enforcing these rights were relatively low. Court fees were not high: to bring a private suit for an amount over 1,000 dr. required a payment of only 30 dr.; for an amount between 100 dr. and 1,000 dr. only 3 dr.; for suits involving amounts less than 100 dr. there was no fee.⁶³ The law was also relatively simple so that the average citizen did not need to hire a professional to make a charge and present his case.⁶⁴ The courts met around 200 times a year. If one needed to distrain on a property, the demarch was there to help.⁶⁵ In cases where the debtor did not have any real assets that could be pledged as security or seized in the event of default, the laws of Athens allowed creditors to seize the debtor and to hold him in debt-bondage until he paid off the debt.⁶⁶ The laws of Gortyn on Crete also contain several provisions about debt-bondage, and there is evidence for it in other Greek communities.⁶⁷ This appears to have been rare but it did give creditors some security that their loan would be paid off even if the debtor had no assets. Even though this may appear harsh to modern eyes, it was an improvement over enslavement for debt, which was practiced in Attica before Solon abolished it in the early sixth century BCE.

Athens was not the only city that kept written records of sales and contracts in public archives. At Tenos the *astynomoi* kept a record of sales and dowries dated by an eponymous archon and the month.⁶⁸ One inscription contains an apparently complete record of forty-seven transactions for one year.⁶⁹ The records include not only regular sales but also a few transactions involving real security, which are described as sales.⁷⁰ This was clearly for the benefit of the owners, who could prove that the lien on the property had been removed. The information for each transaction is quite detailed. There is: (1) the name of the buyer identified by patronymic and deme (in the case of a woman, followed by the name of her tutor); (2) the name of the seller identified by patronymic and deme; (3) the verb ‘bought’; (4) a description of the property; (5) the location of the property (reference to one of the quarters of the city or to the deme in the countryside, to neighbors or other geographical markers); and (6) names of guarantors (*prateres* or *bebaiotai*, usually one or two, but in some cases as many as ten). In some cases there is additional information such as the name of the previous owner, which would show that the seller had good title when he sold.⁷¹

The description of the property can be as brief as one word ('house' [οἰκία] or 'field' [χῶρον]). In some cases, however, one finds more details such as information about roof tiles, towers, doors, viaducts, gardens and enclosures.⁷² The purchase prices indicate that it was not only the wealthy who registered the sales of their property. The prices range from a low of 60 dr. (#29) to a high of 8,000 dr. (#40). There are forty amounts preserved out of the forty-seven sales that were originally on the stone. One out of five are 300 dr. or less. Over a third fall below 500 dr., and over half fall below 1,000 dr., prices that would have been affordable by citizens with modest resources (see [Appendix III](#)). There is no registration fee given for each of the sales as there is in the *poletai* documents at Athens, but if there was one, it could not have been very high for it did not discourage those with small amounts of property from registering their sales. The inscription also reveals that property was not circulating within a small group of neighbors and kin. The tribal affiliations recorded for the buyer and seller appear to denote geographical regions.⁷³ In thirty-eight cases these affiliations are preserved for both parties, and in the overwhelming majority of cases, thirty-one, the buyer and seller come from different regions. Once again we find that the existence of written records helps to reduce the asymmetry of information that would otherwise have discouraged transactions between parties from different areas (for asymmetry of information in transactions concerning amphoras, see Lawall, [Chapter II](#) of this volume). Finally, it has been noted that some of the sales are actually the repayment of loans made on the security of property.⁷⁴ The amounts in these transactions range from a high of 5,000 dr. (#39) to a low of 100 dr. (#30), which suggests that credit in the form of secured loans was available to the wealthy and to those of modest means alike.

Athens and Tenos were not unusual in maintaining records about sales of property. A papyrus dated to the third century BCE collects several laws from Ptolemaic Alexandria and provides rules about registering sales. The treasurers are to record the names of sellers and buyers with their patronymics and demes, the date of the transaction, and the location of the property. As several scholars have noted, the type of information recorded in these documents is very similar to that found in the records of sales from Tenos. The registration fee is not preserved but appears to have been low, possibly only 5 percent.⁷⁵ There is also evidence for similar types of records in Miletus, Samos, Camarina and possibly several cities in Northern Greece.⁷⁶ The practice was clearly widespread. In Roman Egypt there was a central register called the *bibliothēke ktēseōn*.⁷⁷ These records may have helped officials in levying taxes, but the primary aim of the edict is to prevent fraud through ignorance (ἵνα οἱ συναλλάσσοντες μὴ κατ' ἄγνοιαν ἐνεδρεύωνται) or to reduce 'asymmetry of information.' These records share the same deficiencies as those from the Greek world: they only give the names of neighbors but do not indicate where the precise boundary lay.

The role of the state in protecting property rights and creating archives with documents to prove ownership helped to lay the foundations for economic growth in the Greek world. The existence of sales records served to reduce transaction costs by assuring buyers that sellers had secure title. As de Soto observes, these records also encouraged landowners to think of their land as an asset that could be exchanged on the market. The best indication of this is the Greek view of real security. There are two basic forms of real security, substitutive and collateral. In the substitutive form of security, the creditor accepts the property as a substitute for the loan if the debtor defaults.⁷⁸ The creditor does not view the property pledged as security as a commodity that can be exchanged for cash in the market to pay off the debt. He is not interested in the cash value of the security but in the security as property for his own use. This has two important implications. On the one hand, the borrower cannot make further loans on the security after pledging it to one creditor. On the other, if there is a difference between the market value of the security and the amount of the loan, the borrower does not have a right to the excess, and the creditor cannot demand the payment of any deficit. In more general terms, it means that the creditor does not view the security as a commodity, only as property capable of being transferred to his ownership. In the collateral form of security, the creditor views the object pledged as security as a commodity, which can be sold in the market. He is not interested in taking over control of the asset, but in selling it on the market for cash. This has three important implications. First, if the debtor defaults and the creditor takes the security and sells it but does not gain enough cash to cover the total amount of the loan, the creditor has the right to demand the deficiency from the debtor. Second, if the creditor distrains on the security, sells it and recovers a larger sum than the amount of the debt, the debtor has the right to recover the excess. Third, if the creditor believes that the value of the security far exceeds the value of the loan and gives his agreement, the debtor can contract additional loans on the same security.

There can be no question that the Athenians in particular and the citizens of the Greek *poleis* in general viewed land as an asset that could be exchanged on the market and therefore adopted the collateral form of security as the following passages demonstrate.

1) Dem. 28.18

To where would we turn if you should vote for any other verdict? To the property pledged as security to our creditors? But that belongs to them. To the excess (resulting from the sale of the security)? But that belongs to him if we owe the *epobolia*.

Demosthenes brought a private suit against his guardians for mismanaging and embezzling his inheritance. In this passage he tells the judges that if they vote against him, he will not have any property left. He claims that he has pledged

most of his property as security to his creditors for loans contracted to pay for liturgies and other expenses. Demosthenes states that should his creditors seize and sell this property, he would still have a right to the excess (περιόντω) from which he can pay Aphobus the *epobolia* for losing his suit. The *epobolia* was a penalty of one-sixth the amount claimed in a private suit for plaintiffs who lost their cases.⁷⁹ Demosthenes therefore assumes that he will have a right to any difference between the sale price of the security and the amount of his obligation to his creditors. If real security in Athenian law was substitutive, Demosthenes would not have a right to any excess.

2) Dem. 32.30

He (i.e. Protus) believes that with your help he is going to avoid paying us the deficiency that has resulted.

The speaker Demo has made a loan to Protus on the security of grain purchased in Syracuse (Dem. 32.14). When Protus returned to Athens and did not repay the loan, Demo took possession of the grain (Dem. 32.20). Because the price of grain had fallen since the loan was made (Dem. 32.25), the sale of the grain would not have covered the principal. As a result, Demo says that he still has the right to recover the difference between the money gained by the sale of the grain and the amount of the loan.

3) Dem. 33.10

After stationing men to guard the ship, I told the whole story to the sureties of the bank and turned the security over to them, telling them that the foreigner had a lien of ten *mnai* on the ship. Having arranged this, I attached the slaves, in order that, if any shortage occurred, the deficiency might be made up by the proceeds of their sale.

This passage comes from the speech *Against Apaturius*. The speaker tells how Apaturius had failed to repay a loan and was being pressed by his creditors, who were about to seize his ship. Parmeno, a friend of Apaturius, consented to lend him ten *mnai*, which he borrowed from the banker Heracleides, and asked the speaker to contribute thirty *mnai*. Parmeno then quarreled with Apaturius and asked the speaker to assume full responsibility for the loan. The speaker drew up an agreement in which he listed himself as creditor for ten *mnai*. The speaker, however, does not consider the ship as equivalent to the debt (substitutive security) because he envisages the possibility that the proceeds from the sale of the ship might not cover the entire loan. In this case, he would be entitled to ask for the shortfall from Apaturius (collateral).

4) IG ii² 2670 = Finley 1985a no. 146

Marker [of a property] pledged as security for the dowry of Hippocleia, the daughter of Demochares of Leuconoion, one talent. The excess value has been pledged to the Kekropidai, the Lukonidai, and the Phleians.

5) *Hesperia* Suppl. 7 (1943) 1, no. 1 = Finley 1985a no. 147, lines 1–7

Marker of a house pledged as security for the dowry of Eirene (?), daughter of Antidorus of Leuconoion, 1,000 drachmas. The excess value have been pledged as security to Aglaotime for 200 drachmas, and to the Gephyraioi for 200 drachmas.

In both of these arrangements, there is an implicit agreement that the security would be sold in case of default and the excess over the amount of the first lien would be given to the other creditors. In others words, this presupposes a forced sale, not joint ownership by the creditors. Once more, even though the security is already pledged to one set of creditors, the borrower still has the right to pledge the difference between the amount of the first loan and the market value of the security to another creditor. The property is not a substitute for the debt but serves as collateral.

6) *SIG*³ 976, lines 64–68 – Law about Grain from Samos – 200–150 BCE

If any of the borrowers does not pay back the money either the entire sum or a part, let the Chiliastys sell the security (*hypothema*). If there is an excess amount, let him return it to the person who gave the security. If there is a deficit, let him collect it from the person who provides the security.

This law indicates that in the event of default a public official will sell the security. If the sale brings in an amount larger than the debt, the debtor has the right to the excess. On the other hand, if the proceeds from the sale are less than the amount of the loan, the debtor must pay the shortfall. Once more, the security is not a substitute for the loan but is viewed as a commodity that has a cash value. The creditor is interested not in gaining ownership of the property but in the cash value of the property.

7) *SIG*³ 672, lines 64–72 – Decree of Delphi – 162–160 BCE

If they do not pay back in accordance with what has been recorded, let their securities belong to the city, and the Overseers who made the loans have the power to sell them. If the securities once they are sold do not provide the money (i.e. the loan) for which they were pledged to the city, let the borrower and his sureties be liable to the Overseers for the remaining sum (which they can collect) in any way they wish to collect, in the same way as they do with other public and temple money.

As in the law from Samos, the security is not viewed as a substitute for the loan, but as providing cash from its sale. The debtor has the right to the excess. In both of these laws there is a forced sale carried out by public officials.

8) SIG³ 364, lines 32–41 – Law of Ephesus about Debt – early third century BCE

All those who have lent money on the surplus (of property already pledged as security) can recover their money from the excess, whether there is one (creditor) or are more (than one), the first (lenders) and the others in that order. If some have given property to others as security when borrowing money from others making them believe that this property is unencumbered and deceive the later lenders, it is permitted for the later lenders to exchange places with the previous lenders taking into consideration the Common War and take possession of the property. But if there is still something owing to them, the lenders have the right to recover from all the property of the borrower in whatever way they can without incurring any penalty.

Here again, the creditor has the right to demand any deficit between the price obtained by the sale of the security and the amount of the obligation.

In all these passages it is taken for granted that the security can readily be converted into cash. In an economy where there were permanent markets in most communities, that should come as no surprise. This evidence also confirms one of de Soto's insights about the role of property records in enhancing the economic potential of assets. When one records the ownership of a house or land in writing, one starts to think about the object as an economic asset. What was formerly viewed as a place to live or to grow crops becomes something that can produce value either as collateral for a loan or as equity that can be exchanged in the market.

By promoting security of title, property records made it easier for borrowers to obtain credit. Although the information contained in these records is inadequate by modern standards – the descriptions of the property are rudimentary, and liens are not recorded – they were sufficient to expand the circulation of assets outside of a restricted circle of neighbors and family, among whom trust was built by kinship ties and the bonds of *philia* (friendship).⁸⁰ We can see this in the business relationship between Nicobulus and Evergus on the one hand and Pantaenetus on the other (Dem. 37). The case involves a loan of 105 minas made by Evergus and Nicobulus to Pantaenetus on the security of a workshop, mining operations at Maroneia and thirty slaves. Pantaenetus agreed to pay interest at a rate of 1 percent a month or 105 dr. (37.5). The two lenders took over a loan to Pantaenetus made by Mnesicles and two other lenders. After the agreement was concluded, Nicobulus departed for the Black Sea on a trading voyage. When he returned, he discovered that Evergus had seized the workshop and the slaves. Not surprisingly, there were two versions of what happened. Pantaenetus claimed that Evergus had ejected him by force from his property contrary to the terms of the agreement and had caused him to

become a public debtor. Pantaenetus had probably leased a mining concession from the state and could no longer make payments after Evergus took over his property. Evergus said that Pantaenetus had failed to pay interest and to abide by the other terms of the contract. Evergus also brought forward another set of lenders who insisted that Pantaenetus regain possession of his property.

At this point Nicobulus went to Mnesicles, who had introduced Pantaenetus to him, and complained about the borrower's conduct. Mnesicles promised to help all the parties work out a solution. When they all met, the other lenders made two alternative proposals: either Nicobulus and Evergus take their money and leave or they pay the other lenders their share of the loan and depart. Nicobulus was in no mood to continue doing business with Pantaenetus and convinced Evergus to choose the first proposal, which was the safest option for both of them. The other lenders quickly realized that they had spoken too hastily and that this solution involved risks for them given Pantaenetus' previous behavior. They therefore insisted that Nicobulus act as guarantor for their loan to give them protection in case of any further trouble. At the urging of Pantaenetus, Nicobulus accepted this solution but only on the condition that Pantaenetus grant him a release from all further claims. A three-sided legal agreement was then worked out, which provided a temporary end to the dispute. Later, however, Pantaenetus brought an action for damages against Evergus and won a judgment. Encouraged by this success, Pantaenetus brought a separate action against Nicobulus, who responded by bringing a *paragraphe* action against Pantaenetus on the grounds that he had granted him a release.

I am not going to discuss here the many important legal issues in the speech, which I have written about in detail elsewhere.⁸¹ The question here is how does Nicobulus portray the relationships among the various parties. First, the loan to Pantaenetus is not one in a series of loans between the lenders and the borrower in which trust is gradually built up by repeat transactions. Before Mnesicles introduced Pantaenetus to the lenders, they were apparently complete strangers. What gives them the confidence to make the loan is not the trust achieved by a long-term relationship but the real security pledged by the borrower. They are not linked by any ties of friendship or kinship. When Mnesicles intervenes in the dispute, he does so to fulfill his legal duties as a guarantor, who was required to warrant title in a contract of sale. Considerations of status or social ties do not enter into their decisions. Second, in the negotiations between the two sets of lenders, each party makes his decisions after calculating risk and profitability, and the solution is a contractual agreement. When Nicobulus accepts the first proposal made by the other lenders, his main reason is to minimize his risk and safeguard his assets. When the other lenders decide to alter their proposal, they do so to minimize their risks. No one appeals to the need to preserve social ties. And no one talks about doing anyone a favor or criticizes one of the other parties for refusing

to return a favor. The language of *philia* (friendship) is entirely absent. The evidence of this speech is not an isolated example; business relationships are portrayed in the same way in several other speeches involving commercial transactions (Dem. 32; 33; 34; 35; 56).

The role of the state in protecting property rights and creating archives with documents to prove ownership helped to lay the foundations for economic growth in the world of the Greek *poleis*. The existence of sales records served to reduce transaction costs by assuring buyers that sellers had secure title. These records also encouraged landowners to think of their land as an asset that could be exchanged on the market. By promoting security of title, they made it easier for borrowers to obtain credit. Although the information contained in these records is inadequate by modern standards – the descriptions of the property are rudimentary, and liens are not recorded – they were sufficient to expand the circulation of assets outside of a restricted circle of neighbors and family. This was one of the prerequisites for increased specialization of labor, the development of markets and economic growth.

APPENDIX I

Residence of Buyers and the Location of Properties in the *Hekatomtai* Records

For the evidence see Lambert 1997: 114–47.

1. Location of property – unknown
Deme of buyer – unknown
2. Location of property – unknown
Deme of buyer – unknown
3. Location of property – Upper Lamptraí
Deme of buyer – Melite
4. Location of property – Upper Lamptraí
Deme of buyer – Melite (?)
5. Location of property – unknown
Deme of buyer – unknown
6. Location of property – unknown
Deme of buyer – unknown
7. Location of property – unknown
Deme of buyer – unknown
8. Location of property – unknown
Deme of buyer – unknown
9. Location of property – unknown
Deme of buyer – unknown
10. Location of property – unknown
Deme of buyer – Pithos (?)

11. Location of property – Teithras
Deme of buyer – unknown
12. Location of property – Prasiai
Deme of buyer – Myrrhinous (?)
13. Location of Property – Prasiai
Deme of buyer – Athmonon
14. Location of property – Prasiai
Deme of buyer – unknown
15. Location of property – Prasiai or Paiania
Deme of buyer – Myrrhinous
16. Location of property – Paiania
Deme of buyer – unknown
17. Location of property – unknown
Deme of buyer – Rhamnous (?)
18. Location of property – unknown
Deme of buyer – Myrrhinous (?)
19. Location of property – unknown
Deme of buyer – Myrrhinous (?)
20. Location of property – unknown
Deme of buyer – unknown
21. Location of property – unknown
Deme of buyer – unknown
22. Location of property – unknown
Deme of buyer – Cholleidai or Cholargos (?)
23. Location of property – unknown
Deme of buyer – Cholleidai or Cholargos (?)
24. Location of property – unknown
Deme of buyer – Cholleidai or Cholargos (?)
25. Location of property – unknown
Deme of buyer – Cholleidai or Cholargos (?)
26. Location of property – unknown
Deme of buyer – unknown
27. Location of property – Cholleidai (?)
Deme of buyer – Cholleidai or Cholargos (?)
28. Location of property – unknown
Deme of buyer – Cholleidai or Cholargos (?)
29. Location of property – unknown
Deme of buyer – Cholleidai or Cholargos (?)
30. Location of property – unknown
Deme of buyer – unknown
31. Location of property – unknown
Deme of buyer – unknown

32. Location of property – unknown
Deme of buyer – unknown
33. Location of property – unknown
Deme of buyer – unknown
34. Location of property – unknown
Deme of buyer – Sphettos
35. Location of property – unknown
Deme of buyer – Sphettos
36. Location of property – unknown
Deme of buyer – Sphettos
37. Location of property – unknown
Deme of buyer – unknown
38. Location of property – unknown
Deme of buyer – Aphidna
39. Location of property – unknown
Deme of buyer – Sphettos
40. Location of property – unknown
Deme of buyer – unknown
41. Location of property – unknown
Deme of buyer – unknown
42. Location of property – Poros
Deme of buyer – unknown
43. Location of property – Poros
Deme of buyer – unknown
44. Location of property – Poros
Deme of buyer – unknown
45. Location of property – Poros
Deme of buyer – possibly Poros or Paiania
46. Location of property – Besa
Deme of buyer – probably different from Besa
47. Location of property – Poros
Deme of buyer – Halai
48. Location of property – Poros (?)
Deme of buyer – unknown
49. Location of property – unknown
Deme of buyer – unknown
50. Location of property – unknown
Deme of buyer – unknown
51. Location of property – unknown
Deme of buyer – Thorikos
52. Location of property – unknown
Deme of buyer – Thorikos

53. Location of property – unknown
Deme of buyer – Thorikos
54. Location of property – unknown
Deme of buyer – Thorikos
55. Location of property – unknown
Deme of buyer – Thorikos
56. Location of property – unknown
Deme of buyer – unknown
57. Location of property – unknown
Deme of buyer – unknown
58. Location of property – unknown
Deme of buyer – unknown
59. Location of property – unknown
Deme of buyer – Paiania
60. Location of property – unknown
Deme of buyer – Skambonidai
61. Location of property – unknown
Deme of buyer – Melite
62. Location of property – unknown
Deme of buyer – Melite
63. Location of property – Krioa (?)
Deme of buyer – unknown
64. Location of property – Echelidai
Deme of buyer – unknown
65. Location of property – unknown
Deme of buyer – unknown
66. Location of property – Anagyrous (?)
Deme of buyer – Anagyrous (?)
67. Location of property – Am (?)
Deme of buyer – Anagyrous (?)
68. Location of property – Halai
Deme of buyer – Halai
69. Location of property – Halai
Deme of buyer – unknown
70. Location of property – unknown
Deme of buyer – unknown
71. Location of property – unknown
Deme of buyer – unknown
72. Location of property – unknown
Deme of buyer – unknown
73. Location of property – unknown
Deme of buyer – unknown

74. Location of property – Salamis (?)
Deme of buyer – unknown
75. Location of property – unknown
Deme of buyer – Skambonidai
76. Location of property – unknown
Deme of buyer – Paionidai
77. Location of property – Phaleron
Deme of buyer – Xypete
78. Location of property – Phaleron
Deme of buyer – Piraeus
79. Location of property – Thymaitadai
Deme of buyer – Thymaitadai
80. Location of property – Phaleron
Deme of buyer – Piraeus
81. Location of property – Phaleron
Deme of buyer – Sypalettos
82. Location of property – unknown
Deme of buyer – unknown
83. Location of property – unknown
Deme of buyer – unknown
84. Location of property – unknown
Deme of buyer – Oinoe
85. Location of property – Eleusis (?)
Deme of buyer – unknown
86. Location of property – Eleusis (?)
Deme of buyer – unknown
87. Location of property – unknown
Deme of buyer – unknown
88. Location of property – Aphidna
Deme of buyer – Aphidna
89. Location of property – Aphidna
Deme of buyer – Aphidna
90. Location of property – Aphidna
Deme of buyer – Aphidna
91. Location of property – Aphidna
Deme of buyer – Aphidna
92. Location of property – Aphidna
Deme of buyer – Aphidna
93. Location of property – Aphidna
Deme of buyer – Kolonos
94. Location of property – Aphidna
Deme of buyer – Aphidna

95. Location of property – Oinoe
Deme of buyer – Oinoe
96. Location of property – Oinoe
Deme of buyer – Oinoe
97. Location of property – unknown
Deme of buyer – unknown
98. Location of property – Rhamnous
Deme of buyer – Rhamnous
99. Location of property – Rhamnous
Deme of buyer – Rhamnous
100. Location of property – Rhamnous
Deme of buyer – unknown
101. Location of property – unknown
Deme of buyer – unknown
102. Location of property – unknown
Deme of buyer – unknown
103. Location of property – unknown
Deme of buyer – unknown
104. Location of property – unknown
Deme of buyer – unknown
105. Location of property – Phlya
Deme of buyer – Lamptraí
106. Location of property – Phlya
Deme of buyer – unknown
107. Location of property – Xypete
Deme of buyer – Xypete
108. Location of property – Athmonon
Deme of buyer – Athmonon
109. Location of property – Athmonon
Deme of buyer – Athmonon
110. Location of property – Athmonon
Deme of buyer – unknown
111. Location of property – Alopeke
Deme of buyer – Teithras
112. Location of property – Alopeke
Deme of buyer – Aphidna
113. Location of property – Salamis
Deme of buyer – Oion
114. Location of property – unknown
Deme of buyer – unknown
115. Location of property – unknown
Deme of buyer – unknown

- 116. Location of property – unknown
Deme of buyer – unknown
- 117. Location of property – unknown
Deme of buyer – unknown
- 118. Location of property – Lousia
Deme of buyer – Acharnai
- 119. Location of property – unknown
Deme of buyer – unknown
- 120. Location of property – unknown
Deme of buyer – Euonymon
- 121. Location of property – unknown
Deme of buyer – unknown
- 122. Location of property – unknown
Deme of buyer – Alopeke
- 123. Location of property – unknown
Deme of buyer – Pallene
- 124. Location of property – Pallene
Deme of buyer – Pallene
- 125. Location of property – Pallene
Deme of buyer – Pallene
- 126. Location of property – Anaphlystos
Deme of buyer – Sounion
- 127. Location of property – unknown
Deme of buyer – unknown
- 128. Location of property – unknown
Deme of buyer – unknown
- 129. Location of property – unknown
Deme of buyer – unknown
- 130. Location of property – unknown
Deme of buyer – Kydantidai
- 131. Location of property – Kydantidai
Deme of buyer – Kydantidai
- 132. Location of property – Kydantidai
Deme of buyer – Kydantidai
- 133. Location of property – Kydantidai
Deme of buyer – Kydantidai
- 134. Location of property – Kephale
Deme of buyer – Kedoi (?)
- 135. Location of property – Kothokidai
Deme of buyer – Kothokidai
- 136. Location of property – Kothokidai
Deme of buyer – Kothokidai

137. Location of property – unknown

Deme of buyer – unknown

138. Location of property – Acharnai

Deme of buyer – Azenia

139. Location of property – unknown

Deme of buyer – Cholargos

140. Location of property – unknown

Deme of buyer – unknown

141. Location of property – unknown

Deme of buyer – Acharnai

142. Location of property – unknown

Deme of buyer – Euonymon

143. Location of property – unknown

Deme of buyer – unknown

144. Location of property – unknown

Deme of buyer – unknown

Location of property and deme of buyer the same – 25

#27(?), #45(?), #66, #68, #79, #88, #89, #90, #91, #92, #94, #95, #96,
#98, #99, #107, #108, #109, #124, #125, #131, #132, #133, #135, #136

Location of property and deme of buyer different – 21

#3, #4, #10, #12, #13, #15, #46, #47, #77, #78, #80, #81, #93, #105,
#111, #112, #113, #118, #126, #134, #138

APPENDIX II

Lenders and Borrowers in Classical and Hellenistic Athens

Number of <i>Horos</i>	Deme of Lender	Find Spot	Distance
1	Euonymon	Athens	6–7 km.
2A	Thria	Athens	15 km.
3	Paiania	Acharnai	15 km.
4	Cholargos	Pnyx/Areopagus	very close
5	Halai	Pnyx/Areopagus	15 or 20 km.
6	Oinoe	Eleusis	15 km.
11	Kephisia	Spata	15 km.
12	Kephale	Dionysos	32 km.
12A	Halai	between Laurion and Sounion	25 or 30 km.
13	Angele	Koropi	7–8 km.
	Sounion		20 km.
14	Halai	Vari	close
15	Aphidna	Patissia	20 km.

Number of <i>Horos</i>	Deme of Lender	Find Spot	Distance
16A	Euonymon	Trikorynthos	25 km.
17	Prospalta	Laurion	12–15 km.
19	Teithras	Keratea	30 km.
	Anaphlystos		7–8 km.
22	Athmonon	Marousi	very close
24	Phrearrhioi	near Sounion	12–13 km.
26	Thria	Kallirhoe (near Acharnai?)	12–13 km.
28	Halai	Menidi (near Acharnai?)	25 km.
32	Ikarion	Spata	15 km.
33	Phaleron	Athens	5 km.
42	Lamptraí	Decelea	30 km.
51A	Euonymon	Athens – Agora	5 km.
53	Pithos	Agora of Athens	12–13 km.
54	Kerameis	Athens	near
55	Phyle	Peiraieus	22–23 km.
58	Oe	Peiraieus	15 km.
60A	Pallene	Agora	8–10 km.
65	Steiria	Acharnai	32–33 km.
66A	Paiania	Athens – Agora	12–13 km.
66D	Anaphlystos	Athens – Agora	32 km.
67A	Kerameis	Athens – Agora	very close
68	Lakiadai	Peiraieus	6–7 km.
69	Aphidna	near Acropolis	25 km.
70	Alopeke	Munichia	10 km.
72A	Marathon	Agora	22 km.
	Aphidna		22 km.
73A	Steiria	Agora	20 km.
	Rhamnous		30 km.
76	Athmonon	near Acropolis	12 km.
77	Aigilia	Acropolis	30 km.
78A	Athmonon	Agora	10 km.
80A	Euonymon	Agora	6–7 km.
81C	Phegaia	Agora	20 km.
85C	Gargettos	Athens – Agora	12–13 km.
86	Eleusis	Athens	17–18 km.
87	Aixone	near Dipylon	12 km.
88	Aixone	Thorikos	28 km.
89	Paiania (?)	Sinterni	25 km. (?)
90	Hamaxanteia (?)	Markopoulo	(?)
90A	Angele	Athens	21–22 km.
92A	Phaleron	Athens – Agora	3–4 km.
92B	Phaleron	Athens	5 km.
95A	Rhamnous	Marathon	12 km.
SEG 41:129	Rhamnous	Eitea	5 km.
SEG 54:252	Sounion	Phrearrhioi	12–13 km.
SEG 54:253	Trikorynthos	Aphidna	12–13 km.
SEG 54:255	Kato Kephisia	Paiania	12–13 km.
SEG 57:168	Koropi	Eupyridai	18–19 km.

Loans grouped by distance between deme of lender and location of the property

1–10 km. 14 (#1, #4, #13 [lender], #14, #22, #33, #54, #60A, #68, #70, #78A, #80A, #92B, SEG 41:129)

11–20 km. 21 (#2A, #3, #5, #6, #11, #13 [holds document], #15, #17, #24, #26, #32, #53, #58, #76, #86, #87, #95A, SEG 54:252, SEG 54:253, SEG 54:255, SEG 57:168)

21 or more 15 (#12, #12A, #16A, #19, #28, #42, #55, #65, #69, #72A, #73A, #77, #88, #89, #90A)

APPENDIX III

Sales of Property on Tenos (IG XII 5, 872)

	Tribe of Seller	Tribe of Buyer	Purchase Price
1.	n.p.	n.p.	2,500 dr.
2.	n.p.	n.p.	n.p.
3.	n.p.	n.p.	n.p.
4.	n.p.	n.p.	n.p.
5.	Thryesis	n.p.	n.p.
6.	Thryesis	Klymenis	n.p.
7.	Thryesis	Thryesis	1,678 dr. 3 obols
8.	Donakis	Thryesis	5,000 dr.
9.	Thestias	Thestias	235 dr.
10.	Thryesis	Klymenis	2,300 dr.
11.	Donakis	Thryesis	1,287 dr. 4 obols
12.	Thryesis	Thestias	400 dr.
13.	Thryesis	Thryesis	n.p.
14.	n.p.	Eschatiotes	400 dr.
15.	Heraclides	Klymenis	2,070 dr.
16.	Thryesis	Heraclides	1,700 dr.
17.	Thestias	Heraclides	400 dr.
18.	n.p.	Eschatiotes	500 dr.
19.	n.p.	Thryesis	670 dr.
20.	Hyakinthis	Thestias	120 dr.
21.	City	Heraclides	2,400 dr.
22.	Heraclides	Heraclides	3,700 dr.
23.	Eschatiotes	City	4,700 dr.
24.	Thestias	Thryesis	750 dr.
25.	Thryesis	Eleithyas	250 dr.
26.	Heraclides	Eschatiotes	400 dr.
27.	Heraclides	Eschatiotes	450 dr.
28.	City	Eschatiotes	850 dr.
29.	Eschatiotes	Eschatiotes	60 dr.
30.	Eleithyas	City	100 dr.
31.	Eschatiotes	Klymenis	100 dr.

	Tribe of Seller	Tribe of Buyer	Purchase Price
32.	Thestias	Thryesis	500 dr.
33.	Eleithyias	Thryesis	1,000 dr.
34.	Thestias	n.p.	4,950 dr.
35.	City	City	700 dr.
36.	Thestias and Eleithyias	Eleithyias	6,000 dr.
37.	Donakis	Thestias	650 dr.
38.	Thestias	Thestias	2,500 dr.
39.	Donakis	Eleithyias	5,000 dr.
40.	Eleithyias	City	8,000 dr.
41.	City	Klymenis	4,000 dr.
42.	Thestias	Eleithyias	900 dr.
43.	Thestias	Heraclides	2,500 dr.
44.	City, Thestias	Heraclides	300 dr.
45.	Heraclides	City, Thestias	300 dr.
46.	Thestias	Thryesis	1,400 dr.
47.	City	Eschatiotes	n.p.

Purchase Prices

Less than 500 dr. – 15 total – #9 (235 dr.), #12 (400 dr.), #14 (400 dr.), #17 (400 dr.), #18 (500 dr.), #20 (120 dr.), #25 (250 dr.), #26 (400 dr.), #27 (450 dr.), #29 (60 dr.), #30 (100 dr.), #31 (100 dr.), #32 (500 dr.), #44 (300 dr.), #45 (300 dr.)

Between 501 dr. and 1,000 dr. – 7 total – #19 (670 dr.), #24 (750 dr.), #28 (850 dr.), #33 (1,000 dr.), #35 (700 dr.), #37 (650 dr.), #42 (900 dr.)

Between 1,001 dr. and 2,000 dr. – 4 total – #7 (1,678 dr. 3 obols), #11 (1,287 dr. 4 obols), #16 (1,700 dr.), #46 (1,400 dr.)

Between 2,001 dr. and, 3000 dr. – 6 total – #1 (2,500 dr.), #10 (2,300 dr.), #15 (2,070 dr.), #21 (2,400 dr.), #38 (2,500 dr.), #43 (2,500 dr.)

Between 3,001 dr. and 4,000 dr. – 2 total – #22 (3,700 dr.), #41 (4,000 dr.).

Over 4000 dr. – 6 total – #8 (5,000 dr.), #23 (4,700 dr.), #34 (4,950 dr.), #36 (6,000 dr.), #39 (5,000 dr.), #40 (8,000 dr.)

Purchases relating to real security – 6 total – #5 (price not preserved), #7 (1,678 dr. 3 obols), #16 (1,700 dr.), #30 (100 dr.), #39 (5,000 dr.), #46 (1,400 dr.)

Sales in which the buyer and seller come from the same region – 7 total – #7, #9, #13, #22, #29, #35, #36

Sales in which the buyer and seller come from different regions – 31 total – #6, #8, #9, #10, #11, #12, #15, #16, #17, #20, #21, #23, #24, #25, #26, #27, #30, #31, #32, #33, #37, #38, #39, #40, #41, #42, #43, #44, #45, #46, #47

NOTES

1 de Soto 2000: 45. In this chapter I use the spelling of Attic demes used by Traill 1975.

2 de Soto 2000: 47–62.

3 de Soto 2000: 57.

- 4 Greeks have a more flexible concept of ownership: Thür 2008: 174–5. For an analysis of the flaws in Thür's view and the evidence contradicting it, see Harris 2008b: 194–6. Erdas 2012: 350 follows Harris and rightly rejects Thür's interpretation of the phrase *oune katochos*. Cf. Game 2008: 80.
- 5 The view that the Greeks had a relative concept of ownership goes back to Leist 1886 and has been followed by Harrison 1968: 201–4, who is in turn followed by Todd 1993: 240–1. The view that the Roman ownership implied an unlimited power has been 'erroneously attributed to Roman law by modern Romanistic lawyers' (Schulz 1951: 339).
- 6 Athenian law has a concept of family ownership as opposed to individual ownership: Foxhall 1989: 28, 31; Hunter 1994: 10–13; Osborne 1996. For the evidence contradicting this view and analysis see MacDowell 1989.
- 7 Honoré 1961: 108. Compare the definition for Roman law given by Schulz 1951: 338: 'Ownership is that right over a corporeal thing (N.B.) which on principle endows its holder with full rights over the thing, although this power may be subject to various limitations.' For ownership in Greek thought as the right to do whatever one wishes with an object see Pl. *Euthyd.* 301e.
- 8 Pace Todd 1993: 243: 'Ownership and possession are bundles of rights which we package together in particular ways; Athenians may have packaged them differently.' Todd does not explain what he means and provides no evidence for this assertion.
- 9 Even though there was no abstract noun in Greek equivalent to the Roman term *dominium*, one should not make too much of this (Kränzlein 1963: 29: 'Dem Umstand, daß sich kein Substantiv für Eigentum nachweisen läßt, ist keine Bedeutung beizumessen.'). The Greeks expressed the idea of ownership with the genitive case; see Kränzlein 1963: 34–5.
- 10 For this procedure see Harp. *s.v. exoules*. Harrison 1968: 218, 311–2 follows Rabel 1915 and 1917 in believing that this action could only be brought against those who excluded someone who was entitled to enter into land for the purposes of execution, but the Harpocratian passage indicates that its application was broader than this. Todd 1993: 144–5 follows Harrison.
- 11 For this procedure see Harris 1994 = Harris 2006: 373–90.
- 12 Dem. 23.60–61.
- 13 See, for instance, *IG ii²* 2492, 2496, 2499. On leases in Attica see Behrend 1970.
- 14 For the payment of rent in leases see, for example, *IG ii²* 1241, line 33; 2492, line 6; 2499, line 18. For the right to collect the earnings of slaves, see Dem. 53.20.
- 15 For modes of acquisition in Greek law see Kränzlein 1963: 71–129. Some sources report that land was inalienable in Archaic and Classical Sparta but see Hodkinson 1986. For the alienability of land in Early Greece see Finley 1968b.
- 16 According to the Aristotelian *Constitution of the Athenians* (12.4) the *seisachtheia* of Solon was an abolition of debts, but this view is based on a misinterpretation of fr. 36 [West]. See Harris 1997.
- 17 For a similar guarantee not to cancel debts or to confiscate property at Pistiros in Thrace see *SEG* 49:911, lines 7–12. For an oath not to cancel debts at Delphi *FD* III 294, col.VII, lines 6–7 (late fifth or early fourth century BCE).
- 18 Cf. Isocrates *Panath.* 259 (the Spartans never carry out a cancellation of debts).
- 19 For the right to disinherit children in Athenian and Roman law see Wurm 1972.
- 20 For confiscation of property as a penalty in Athenian law see, for example, Dem. 21.43; 23.45. For the *apographe* procedure to collect public debts see Harrison 1971: 211–17.
- 21 For restrictions on ownership of land by foreigners see Hennig 1994. For the grant of *enkte-sis ges* see Peçirka 1966. Women do not appear to have owned property at Athens, but there is no evidence for a law forbidding the practice. On women's property rights see Schaps 1979 and van Bremen 1996.
- 22 Isae. 10.10 with Kuenen-Janssens 1941.
- 23 On laws about mines in Attica see MacDowell 2006 and Faraguna 2006.
- 24 See Kränzlein 1963: 53–70; Hennig 1995.

- 25 Arist. *Ath. Pol.* 60.2–3; Rhodes 1981: 672–5.
- 26 P. Halle 1, lines 80–105 with Bechtel *et al.* 1913: 64–76.
- 27 For the text of the stèle see Duchêne 1992: 18–20. For these regulations see 46–8 and 54–5.
- 28 OGIS 483 (= SEG 13:521), lines 104–67 (party-walls), 202–30 (cisterns) with Hennig 1995: 255–6, 259–60.
- 29 The following pages (120ff) show that there is no reason to follow Frier and Kehoe 2007: 135 when they assert ‘the Greeks and Romans generally lacked the systematic public registries that are necessary for conclusive resolution of disputes over ownership, boundaries, land use, servitudes, liens; adequate resources and bureaucracies were simply unavailable.’
- 30 Piérart 1974: 177 believes that Plato is innovating here and that Greek city-states did not keep property records (‘il ne semble pas que des cadastres aient existé en Grèce et Platon a sans doute innové’).
- 31 Theophr. fr. 21 (Szegedy-Maszak) [= Stob. 4.2.20].
- 32 See Frier and Kehoe 2007: 120 note 22, who cite Akerlof 1970 and Furubotn and Richter 1998. I believe that Bang 2006 exaggerates the amount of asymmetry of information in ancient economic transactions. I hope to deal with this topic in detail in a future publication.
- 33 For the texts of these inscriptions see Lambert 1997: 5–74.
- 34 Lambert 1997: 225.
- 35 de Soto 2000: 45.
- 36 See Lambert 1997: 114–48.
- 37 For the records of the *poletai* see Langdon in Lalonde, Langdon and Walbank 1991: 58–60.
- 38 See IG i³ 421–30 with Pritchett 1953 and Pritchett and Pippin 1956.
- 39 On these records see Walbank 1982.
- 40 For the examination of accounts presented by officials after their term of office see Arist. *Ath. Pol.* 54.2 with Rhodes 1981: 597–9.
- 41 For the text see Lalonde, Langdon and Walbank 1991: P5, lines 8–39.
- 42 On property records kept in the demes see Faraguna 1997: 23–8.
- 43 IG i³ 425 (414/13), lines 23, 26, 30, 41, 44.
- 44 For records of court decisions kept in the archives of Greek city-states see Arist. *Pol.* 1321b34–40 with Lambrinudakis and Wörle 1983.
- 45 The speaker also states that he found no *horoi* on Phaenippus’ property (Dem. 42.5), but this evidence is not compelling because the law did not require for *horoi* to be placed on land used as collateral.
- 46 The speaker says that the boundaries were forty stades. Scholars have tried to estimate the size of his property from this figure, but without knowing its contours it is impossible to determine the acreage. He may have exaggerated its extent because the figure he gives is larger than that for other known estates. The speaker may well have exaggerated because he knew that his opponent had no official document to prove him wrong. See de Ste. Croix 1966. Note by contrast that in the records of purchases by Zopyrus son of Gorgias at Mieza, the size of the properties is recorded. See Hatzopoulos 2011.
- 47 The earliest mention of boundary-markers in Greek literature is in Homer where two neighbors are disputing about their placement.
- 48 For the text see Haussoullier 1879. For discussion see Faraguna 2005, who argues persuasively that the inscription contains two separate measures.
- 49 SIG³ 633, line 89 with SEG 34:1173 and 37:984.
- 50 For the duty of warranty of title in the law of sale see Pringsheim 1950: 429–72.
- 51 Poll. *Onom.* 8.34–35; Harp. s.v. βεβαιώσεως. Cf. Isae. 10.24. In some cases a guarantor might be named who was not the seller. See Pringsheim 1950: 437–9.
- 52 See Pringsheim 1950: 429–72.
- 53 For a description of the physical characteristics of the *horoi* see Fine 1951: 4–6.
- 54 Finley 1985a: 29–37 assumed that they referred to two different kinds of legal transactions, but see Harris 1988 and 1993a (= Harris 2006: 163–240), which show that there was no difference between the two kinds of expressions.

- 55 See Millett in Finley 1985a: xxi–xxii.
- 56 For the size of estates owned by those in the liturgical class see Davies 1971: xx–xxii.
- 57 Cf. Isoc. 7.33–34.
- 58 Cf. Finley 1985a: 274 note 72.
- 59 Andreyev 1974: 21 notes that half of the creditors come from areas near the property, but this is not as significant as the fact that half do not.
- 60 The action brought against those who violated a contract was the *dike blabes*. Pringsheim 1950: 13–57 argued that there were no consensual contracts in Greek law, and Wolff 1957 believed that agreements reached by mutual consent of the parties were not binding but only those in which there was the transfer of a physical object for a set purpose (*Zweckverfügung*). This view has met with much criticism and is not widely accepted. I plan to discuss this issue elsewhere.
- 61 Finley 1985a: 117 assumed that there were no laws regulating real security in Athens and that this reflected the low level of economic activity at Athens. For criticism of this assumption see Harris 2008b.
- 62 On this law see Harris 1993a: 92–4 (= Harris 2006: 234–8).
- 63 Poll. *Onom.* 8.38 with Harrison 1971: 93–4.
- 64 For the law being simple and easy to understand see Dem. 20.93. One could hire a logographer to write a speech or ask a *synegoros* to speak on one's behalf, but these services were not necessary. On logographer see Lavency 1964. On *synegoroi* see Rubinstein 2000. Nor does it appear that they were very expensive: several of the litigants for whom Lysias wrote speeches were clearly not wealthy (Lys. 1; 24).
- 65 See Ar. *Nub.* 37 with MacDowell 2010: 154–5.
- 66 On debt-bondage in Athens and other Greek communities see Harris 2002b (= Harris 2006: 249–70).
- 67 For debt-bondage at Gortyn see Kristensen 2004.
- 68 IG XII 5, 872–7 (fourth century BCE).
- 69 IG XII 5, 872. See in general Étienne 1990: 50–84. For a good summary see Faraguna 2000: 87–92.
- 70 IG XII 5, 872, lines 74–5, 113–19.
- 71 See Étienne 1990: 55–7.
- 72 For the terms used to describe properties and their contents see Étienne 1990: 25–7.
- 73 For the locations of these regions see Étienne 1990: 28–30.
- 74 Étienne 1990: 52–4.
- 75 *Pap. Hal.* 1, lines 242–52 with the discussion of Faraguna 2000: 75–82. For the documents given by the treasurers to the buyer and the seller (*katagraphe*) see Wolff 1948.
- 76 Miletus: Faraguna 2000: 82–4. Samos: Faraguna 2000: 84–5. Camarina: Faraguna 2000: 92–6. Cities in Northern Greece: Faraguna 2000: 99–108. See also Game 2008.
- 77 *P. Oxy.* II 237, 8, 27–43 (edict of M. Mettius Rufus 89 CE) with Wolff 1978: 253–4 and Jördens 2010.
- 78 This section reproduces much of my analysis in Harris 2013a: 137–42, but I have omitted the Greek texts of the passages from the inscriptions.
- 79 On the *epobolia*, see MacDowell 2008.
- 80 For this primitivist approach to economic relationships in Classical Athens see Millett 1991 *passim*.
- 81 See especially Harris 2006: 190–9 with the modifications in Harris 2013a and 2013c. Earlier versions of this essay were presented to the Law in Context Seminar at the University of Edinburgh and to the Department of History and Archaeology, University of Athens. I would like to thank Michele Faraguna for reading over a draft and offering helpful comments.

PART II

HOUSEHOLD PRODUCTION FOR MARKETS

INDUSTRY STRUCTURE AND INCOME OPPORTUNITIES FOR HOUSEHOLDS IN CLASSICAL ATHENS

Peter Acton

The standard of living in Classical Athens was high by comparison with almost any other society until recent times, and wealth was more evenly distributed than in many societies.¹ By the Classical period the basic daily wage was around six times subsistence requirements, and half of Athens' population lived a life that would have been described in the eighteenth century as 'decent or middling' in Holland and better than the typical Briton.² This advanced lifestyle was manifest in various ways: 10,000 people at a time could attend the theatre in Athens; by contrast, in eighteenth century England only 1 percent of the population ever visited a theatre in their lives. Most importantly, it was manifest in manufactures.

Between subsistence and post-industrial societies, differences in living standards relate largely to the consumption of manufactured goods. Humans have always been willing to trade resources for personal comforts like grooming, sex or entertainment, but once these have become available at affordable prices in the quantities people want them, marginal expenditure tends to be on manufactured products up to the point, late in modern history, where advanced societies are sufficiently satisfied with material possessions to seek additional services with their extra resources instead. Athens was rich in the raw materials of culture including marble, limestone, clay and silver, and trading partners provided other luxury items such as fine cloth, spices, dyestuffs and precious

This chapter draws on the analysis and conclusions of Acton 2014.

metals, often for further processing in Athens.³ The Classical period saw a major increase in output, especially in mining, metalwork, stone, timber and housing, leading to labour shortages, the encouragement of metics, and vastly increased imports of slaves.⁴ Houses were large and comfortable by the standards of the time.⁵ Expenditure on furniture and furnishings grew commensurately and conspicuous consumption became increasingly common in the fourth century. Some couches and tables were highly ornate and inlaid with gold or silver, men and women wore jewellery of outstanding craftsmanship, and decorative ceramics or silverware for festivals might take several man-years of work.⁶ Manufacturing and manufactured items played a central role in Athenian life. This chapter applies contemporary business concepts to make sense of the limited and often confusing data about how Athenian manufacturing businesses actually worked.

The topic is neglected in many accounts of Classical Athens. If one were to consult any reference book or dictionary of Athens or the ancient world and look under 'Industry' or 'Manufacturing,' at best one is likely to find a reference saying 'see under Crafts.' Under 'Crafts' one might find, again at best, references to a few instances where a citizen craftsman has come to the attention of Plato, or Demosthenes has acted for an aggrieved workshop owner. Manufacturing is largely neglected in most histories of Classical Athens, books that bring scholarly perception and insight to its politics, its diplomatic and military strategies, its social structure, art, literature and architecture. One highly regarded book, published as recently as the 1990s and purporting to present a 'portrait' of Athens in her glory days, describes a city almost wholly innocent of commercial pursuits.⁷ Nowhere in its more than 500 pages does it attempt to address how Athenians made a living. The index of thirty-two pages has no entries for craft, industry, manufacturing, metalwork, pottery, retailing, selling, vending or workshop. Artisans working near the agora receive a desultory two paragraphs amid pages describing the religious festivals and events that took place there.

Manufacturing has not been neglected altogether: a number of scholars have made major contributions in specific areas, such as the life and work of craftsmen,⁸ the range of specialized manufacturing trades,⁹ banking,¹⁰ the laws governing commerce,¹¹ and the economies of Greek cities.¹² J. K. Davies has laid out some of the challenges and choices in modelling economic flows in the ancient world.¹³ Others have approached specific historical questions with an open mindedness about economic perspectives that often leads to important insights. All the same, the last major works devoted exclusively to manufacturing were published in 1900/01 (Francotte) and 1920 (Glottz).¹⁴ It remains 'striking how much of the economic historiography of the Mediterranean has concerned itself not with production but with exchange.'¹⁵

One factor behind the relative neglect of manufacturing is the reluctance of many historians to see it as a serious pursuit, vigorously conducted by intelligent

people in the way that other aspects of Athenian life appear to have been. Even Glotz believed that ‘the head of an undertaking was not driven by the need to collect as much capital and labour as possible because he was not driven by the necessity of getting the biggest possible returns out of expensive machines, in order to diminish his general costs and to obtain a progressive increase in profits.’¹⁶ Hopper observed that factories were acquired by chance as a result of other financial dealings, and that there is no evidence of investments made to extend an enterprise, nor of any particular expertise or enthusiasm for efficiency on the part of owners, although he does not explain this peculiar insouciance.¹⁷ Finley mocked Demosthenes for not having taken depreciation into account in his description of returns on his investment in manufacturing;¹⁸ a more charitable interpretation would take returns on manufacturing investment about 20 percent higher than on land to imply that investors did account for depreciation (and some other costs) – at least implicitly. Humphreys speaks of ‘small-scale, disconnected business ventures, assessed by the security of their returns rather than their potentiality for expansion’ and attributes this largely to the social preferences of Athenians, who were happier being *rentiers* rather than serious industrialists.¹⁹ Of course they were happier being *rentiers* – that is how the *apophora* system worked;²⁰ it does not mean that the slaves and freedmen (who actually ran their businesses) were not interested in profit. Even in the 2007 *Cambridge Economic History of the Greco-Roman World*, several contributions start by noting the apparent failure of the ancients to build large manufacturing enterprises.²¹ The analysis undertaken in this chapter demonstrates that firm size was quite varied and followed patterns predictable from modern business theory. It appears that ancient Athenian manufacturers developed and grew their businesses in much the same way we would have done, given the level of available technology.

There were a number of large manufacturing enterprises in Athens. Lysias and Polemarchus claimed to have co-owned 120 slaves, most of whom must have been employed in their shield factory (Lys. 12.19). This figure might be exaggerated but must have seemed plausible to the judges presiding over the case, and even if we halve the number, it remains a large factory.²² We hear of another shield factory some twenty years later (or possibly the same one under new ownership), whose revenues imply at least sixty-five slaves.²³ In his speech against his guardian Aphobus, Demosthenes claimed that one of the workshops he inherited employed “thirty-two or thirty-three slaves and the other, twenty” (Dem. 27.9). Pantaenetus seems to have employed about thirty slaves in processing ore (Dem. 37.4, 17, 31). Aristophanes’ portrayal of Cleon, especially in the *Knights*, is generally taken to mean that he inherited a tannery, or at least funds that a forebear had made from tanning; if so his wealth suggests it was a large enterprise.²⁴ There is reason to believe that Anytus, rich enough to have been accused of bribing a panel of judges, might have owed his wealth

TABLE 6.1. *Impact of Division of Labour*

Skill and Focus	Nails per man/day	Impact of Division of Labour
Non-smith	1–20	–
Smith who does not make nails	200–300	N/A (impact is smith skill)
Smith who makes nails and other objects	800	N/A (impact is expertise in nails)
Smith who only makes nails	2,300	2.9×
Smith who only does one or two stages in nail-making	4,800	2.1×

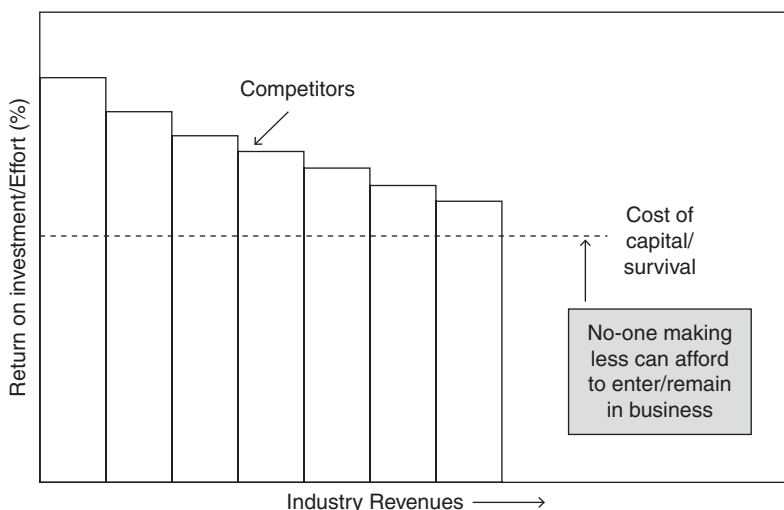
to a similar business.²⁵ To put this in perspective, one should bear in mind that the average size of a factory today is ten to fifteen employees.²⁶ Rather than asking why there were no small firms, we might more profitably ask why firms in certain manufacturing businesses were able to attain a reasonable size, while many remained very small.

One explanation of this – that firm size is a function of division of labour and that, before the widespread use of machinery, there was not much scope to divide labour within a process – is embraced by a number of scholars,²⁷ but its explanatory power is limited. The productivity benefits of labour division, first articulated by Adam Smith, are very real. Smith, whose famous pin factory occupies the whole of the first chapter of *The Wealth of Nations*, starts with the observation that ‘The greatest improvements in the productive powers of labour ... seem to have been the effects of the division of labour.’²⁸ His pin factory has ten people allocated among, perhaps, eighteen tasks and producing 48,000 pins in a day, or 4,800 each, compared with a sole, unskilled operator who ‘could scarce, perhaps, with his utmost industry, make one pin in a day, and certainly could not make twenty.’ Smith attributes this remarkable productivity gain of between 240 and 4,800 times to three effects of the division of labour: an increase in dexterity from practice, less downtime moving between tasks and labour saving machinery. He is quite specific about the impact of dividing labour tasks: in terms of practised dexterity, he suggests that a smith who was not used to making nails could make about 200 to 300 in a day, one who made them regularly but not exclusively might get to 800 to 1,000, and one who made only nails could make 2,300. Specializing in just one step takes it up to the figure of 4,800 (Table 6.1):

We do not know what proportion of a general smith’s time making nails and other objects was spent specifically on nails, so we cannot measure how much specialization had increased in moving to nails (which raised daily output 2.9 times), but we can test the value of moving from making all of a nail to specialising in producing one-tenth of one by using experience curve analysis. The Boston Consulting Group established that in any enterprise, unit costs fall

by a constant percentage each time accumulated experience doubles.²⁹ How much costs fall depends on the economics of specific businesses or activities. Rules of thumb suggest that indirect costs tend to fall by around 30 percent for each doubling, direct manufacturing labour by 6–8 percent and raw material costs seldom by very much at all. On that basis, if they start at the same time and each step takes a similar amount of time, a member of a team of ten who concentrates on one or two steps will always have ten times the experience in a particular step than an individual doing all the steps by himself, so his unit costs should be between $(1 - 0.6^{10} = 54\%)$ and $(1 - 0.08^{10} = 43\%)$ of the non-specialist's. In other words, the specialist in this instance will be between 1.9 and 2.3 times as productive – the very estimate Smith made almost 200 years before experience curve effects were properly measured!

Despite the excellence of Smith's observation, it only goes a little way to explaining firm size. Division of labour into discrete tasks increases productivity and (assuming the product can be sold) enables enterprise growth. It therefore defines the minimum size required for efficient production.³⁰ It does not, however, explain why a firm might be able to build a sustainably profitable business above this minimum size. There is no obvious reason why there would be more job descriptions in a Toyota factory employing 10,000 people than in a Rolls Royce factory employing 1,000 people – probably fewer, since Toyota's scale might mean that it would be more economic to use robots for painting and welding than at Rolls Royce. There are five job descriptions in a MacDonald's franchise, three of them largely interchangeable types of cook. MacDonald's scale cannot be attributed to the productivity benefits of further division of labour; rather it involves *multiplying* labour within job descriptions as more franchises are opened up. Some of the world's largest employers have very few job descriptions (notable examples are the military and the Catholic Church). In Nicias' mine-slave rental business, claimed by Xenophon to number a thousand men, it is likely they were all doing the same basic job of digging (Xen. *Vect.* 23–4). The ancient industries discussed by Bresson, which employed large numbers of labourers in single establishments, making such items as shields, knives and beds, might have had longer production chains than, say, potteries, but not by much.³¹ If division of labour were the only factor, Lysias' shield factory would have employed one gang of six to eight slaves, not ten or more.³² Xenophon (*Cyr.* 8.2.5) famously describes how shoemaking labour was divided among several specialists in urbanized areas, but as Thompson points out 'four workers dividing the tasks can turn out more shoes than four men who do the entire job individually, but it is hard to see how eight teams of four could turn out proportionally more than a single team of four.'³³ Once a firm has exhausted the benefits of division of labour (in the case of the pin factory, Smith thought the optimum number of workers was about ten), if it is to grow to a size larger than the minimum required for



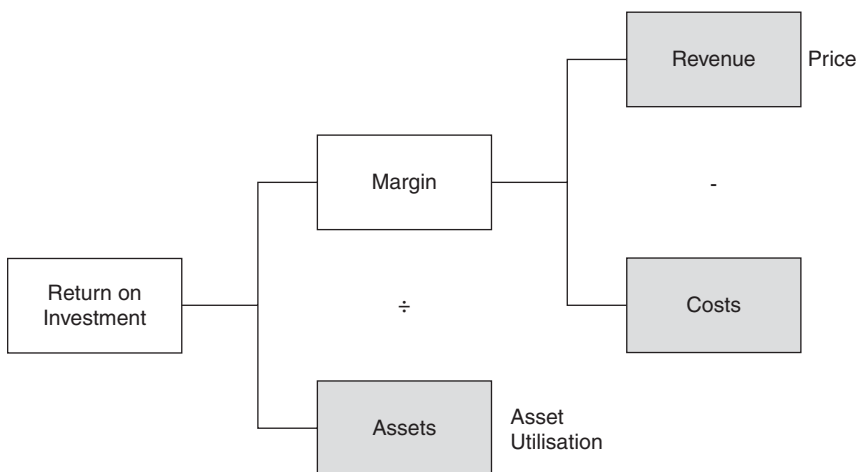
6.1 The Marginal Competitor (P. Acton).

efficient production, it must be through capturing a larger share of the market than competitors who can achieve equal productivity levels by matching its factory layout. We must therefore look for other reasons to explain how this can happen.

The tools used in this chapter to explain enterprise size in Classical Athens are the same ones that contemporary experts in business strategy use to try to understand and predict industry structure. They are based on the Darwinian concept of competitive advantage: if an entity is to outgrow its rivals, it must have some advantage over them in winning resources from the environment. A competitor who is weak at garnering a particular type of resource needs to find a different way of going about it. A key concept is the marginal competitor – the one who can only just survive. If all competitors in an industry are ranked according to their profitability, the one with the worst economics will be making just enough to stay in business, or the cost of capital (Fig. 6.1).³⁴

For anyone to do better than this, they must have an advantage in some element of profitability. Profit is defined as revenue less costs divided by assets, so advantage must consist in one or more of three commercial elements: (1) product preference enabling higher prices; (2) a lower cost position; or (3) a lower investment in assets (Fig. 6.2).

In many businesses, success depends on relative performance on just one of these dimensions. For a winery or a jeweller or an artist, all that really matters is the price that they can get for their product; costs are relatively unimportant. A coal miner's returns, by contrast, depend entirely on cost position, since all producers of the same grade of coal receive the same price per tonne. Wal-Mart's success owed much to its ordering and despatch systems, which enabled it to carry much less inventory than its competitors. In some industries



6.2 Components of Competitive Advantage (P. Acton).

competitors can choose how to compete: breweries can focus on costs (economies of scale) or price (premium beers), and many try to do both.

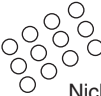
Not all businesses offer scope for competitive advantage. Once a company providing a guard service to commercial buildings has employed someone at the lowest possible wage and persuaded them to turn up on site, its economics are likely to be exactly the same as its competitors'. Some airlines seek premium prices, whilst others offer a low cost option, and all try to maximise asset utilisation ('load factor'), but it is hard to build a sustainable advantage on any dimension, which is why airlines seldom earn good returns and often fail.

In a society with little use of machinery such as Athens, most firms will have similar input costs and similar labour productivity. This fact rules out operating costs as a source of advantage. Few industries required much capital. Assets consisted largely of slaves, and only where inventory was very expensive – perfumes,³⁵ jewellery³⁶ and luxury furniture (Dem. 27.9) are prime examples – would non-slave assets be an important component of a firm's balance sheet. Equipment investment was trivial: a pottery workshop required only clay and slave labour to build and rebuild a furnace. A metal workshop would only have to add an anvil, hammer and tongs, all probably available second-hand. Even large businesses were valued at sums that would have been within the reach of several hundred citizens: a twenty-slave furniture business was pledged as security for a loan of 4,000 drachmas (Dem. 27.9) and a small foundry cost 1,700.³⁷ Epicrates' perfume business went for 4,000 drachmas and was apparently worth much less (Hyp. 3.8). Several *horoi* record loans made on the security of workshops or shops.³⁸ The largest loans are for 6,000 drachmas; several others are for smaller amounts, ranging from 500 drachmas to 1,750 drachmas.³⁹ Because the value of the security was usually twice the value of the loan, the most expensive workshop in the *horoi* would be valued at about

two talents and the least expensive at 1,000 drachmas.⁴⁰ The largest industrial valuation we hear of is of Pantaenetus' ore processing operations at just over three talents (Dem. 37.31), so the capital needs of even the largest workshops were probably not much more than the minimum amount needed to perform liturgies.⁴¹ Mining leases were sufficiently affordable to be acquired primarily by 'prosopographic non-entities.'⁴² Building a trireme was expensive, but the cost was assumed by the state; construction was conducted by naval architects, perhaps using slave gangs to assemble the boats at the Peiraeus and sourcing wood, textile and metal components from independent workshops.⁴³ The process for managing large building projects was state funded and similarly relied on contracted tradesmen and teams.⁴⁴ Even where investment was large, asset turn would not have been a basis for competitive differentiation; slaves of similar accomplishments and productivity probably cost similar amounts and competing on the basis of lower non-labour assets is generally only possible with technological innovation.⁴⁵ To the extent asset investment played a role in competition among Athenian firms, it was as a barrier to entry in a few specific segments.

Barriers to entry (forms of advantage that accrue to incumbents against potential new entrants) are important because if there is nothing to restrict new entry in a particular industry, no established firms can accumulate enough volume on a reliable basis to make expansion worthwhile. If a firm grows beyond the minimum size for efficiency, it must be protected in some way against new competitors who would otherwise win the volume it needs to justify expansion. Some barriers are simple extensions of advantages among existing competitors, such as returns to scale in processing, access to capital, brand-strength, switching costs for customers or access to raw materials. In each case, stronger competitors will tend to earn better returns than weaker ones; in some cases the advantages are so great that a new entrant (naturally a weak position) cannot hope to survive. Other barriers to entry keep competition out through institutional restrictions or by pre-empting an important location where there is only room for one competitor. The analysis that follows shows that many of these types of barrier were found in Classical Athens.⁴⁶

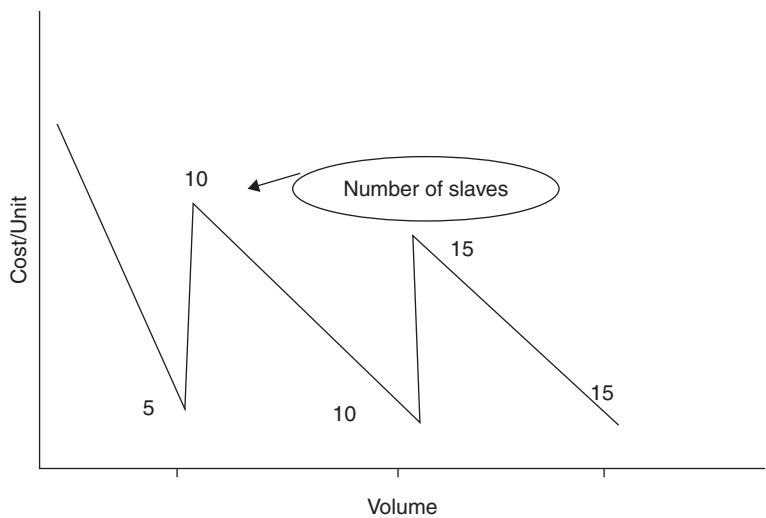
Lacking scope for competitive advantage in costs or asset turn, in most manufacturing sectors in Athens the only way for one firm to do better than its competitors was by making products that customers preferred to those of other competitors. The preferred firm could either charge higher prices or rely on the extra demand to keep its workshop busy when others were idle; most sensible people would do a bit of both. Using the concept of competitive advantage (specifically product differentiation) and its special case, barriers to entry, one can derive a framework, illustrated in [Figure 6.3](#), to identify the conditions under which firms in a given industry will be able to win enough market share to become quite large.⁴⁷

Potential for Differentiation		Barriers to Entry	
		High	Low
	High	 Oligopoly	 Niche Businesses
	Low	 Stalemate	 Fragmented

6.3 Competitive Advantage and Industry Structure (P. Acton).

As we shall see, this framework also enables us to identify which types of business offered exceptional returns to their owners and which offered only subsistence-level income but could serve as a way of making ends meet for citizens with other obligations or of occupying slaves in the intervals between other duties. The specific examples that follow are based on a review of literary, epigraphic and archaeological sources. They are presented in the hope that experts in the relevant products will be able to fill out or modify the picture presented based on current knowledge or new discoveries.

To illustrate the economics of growth in a competitive market, let us take the example of an industry with no barriers to entry or basis for advantage: undecorated ceramics used for family cooking and eating – bowls, plates, and so on. These are simple items and archaeological finds show they were not always especially well made.⁴⁸ Every pottery workshop’s input costs are the same, consisting of fuel, clay and slave labour, and once half a dozen slaves have been divided among five main tasks, one’s pottery workshop is as efficient as it will get.⁴⁹ There are no assets to speak of; even the furnace is rebuilt after one or two firings. While decorated products can be differentiated so that the better painters and makers of complex vessel shapes are in high demand and their works can command better prices, any potter will admit that basic crockery for the kitchen and family meals will look and perform much the same whoever makes it. Prices will tend to settle at the lowest level compatible with subsistence for the household of an efficient pottery workshop owner. If they rise above this and it becomes possible to make more than subsistence money through making coarse ware, other people will enter the business and, to sell their output, must drive prices down. As everyone’s costs are the same, no one

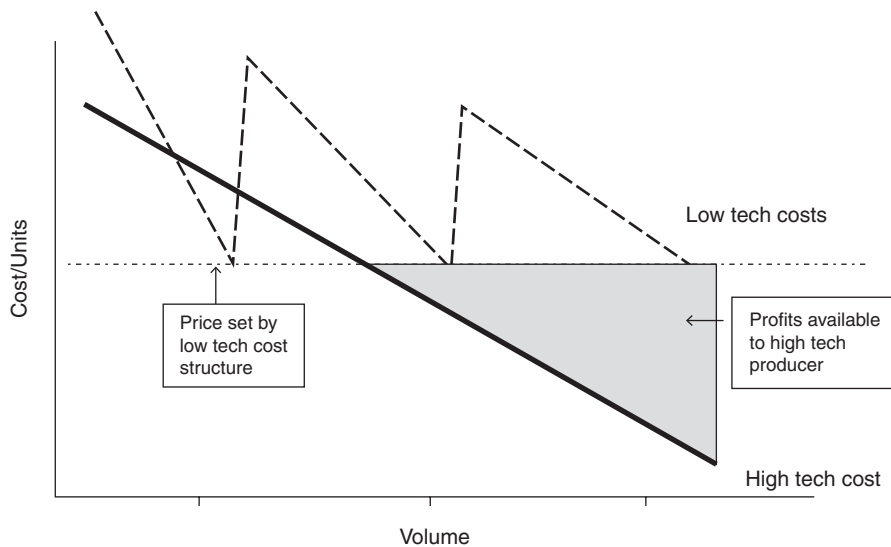


6.4 Adding a Furnace (P. Acton).

can win a price war and everyone will be worse off until attrition restores equilibrium.

Importantly, it makes no sense for a pottery workshop to expand beyond a team of five or six people supporting a single potter. The size of a kiln was limited by heat retention technology and an analysis of throwing times and capacity shows that, in the seven hours it takes for one firing, a single potter can make enough items of any shape to fill a kiln.⁵⁰ The only way for a pottery operation to expand its size beyond six or seven workers would be to work two shifts (one of which would have to be in the dark for most of the year) or to add a second kiln. Either approach doubles the number of workers, but, even if the second kiln or shift can be kept as busy as the first one, there is scarcely any reduction in unit costs since all input costs (slaves, wood and clay) vary directly in line with output. If the second team cannot be kept as busy, then average cost per unit will increase. To keep these additional productive assets busy and unit costs as low as the first team, the workshop has to double sales (Fig. 6.4).

The owner faces the challenge of how to achieve the required increase in market share. As his product is indistinguishable from anyone else's, he will need to cut his prices, but whoever loses the business is certain to retaliate, since, if they do not win the business back, they are left with the same costs as before but less revenue. This price war can be extremely damaging. After it, everyone, including the expander, will have made less than the usual returns in the industry by the amount the price war cost them. This is an eventuality that the Athenians were well aware of: consider the following remarks of Xenophon (*Vect.* 4.6 tr. Waterfield):



6.5 Wedgwood's Economics (P. Acton).

Mining is not like working with bronze or iron, for instance, where if there is a large number of smiths their products become cheap and the smiths are forced out of business. Likewise, when grain or wine is plentiful, the price of the crop falls, working the land becomes unprofitable and in the end large numbers of farmers abandon their work and become traders or retailers or money-lenders instead.

With no way to attract customers other than price and no cost advantage against other competitors, winning extra volume is difficult and costly; depending on it to make expansion worthwhile is high risk.⁵¹

While potters and painters could differentiate their fine ware products if they were good enough, there was no potential for competitive advantage in coarse ware until the manufacturing technology changed. The industrial revolution transformed the structure of the pottery industry by creating a totally different cost structure and the potential to produce superior products at a cost that made them accessible to many more customers. Heat control was improved as underfloor flues and pyromatic beads made larger kilns possible; processing innovations included coal fired kiln drying, the suspension of lead oxides for dipping, novel slip casting techniques and a string-controlled wheel. Steam power was used to grind glazes and turn the throwing wheel, and canals brought in raw materials in bulk at a fraction of the costs of horse transport. Josiah Wedgwood was looking at a very different cost-curve from an Athenian potter. His factory's ability to make highly decorated items to a standard specification at an affordable price developed a large new market for his products among the aspiring middle class who were starting to enjoy the employment and income benefits of the Industrial Revolution (Fig. 6.5).

We can identify other craft activities that also lack entry barriers and bases for advantage. Basic garment manufacture is one such example. All women in Athens, of whatever status, could weave and spin and did so at least for their own households.⁵² Some men possessed the same capabilities (Xen. *Mem.* 2.7.3–6), and, while some male weavers and spinners have been identified (Pl. *Phd.* 87b–c; *Grg.* 490d, 517e; *Resp.* 370e, 374b), third-party sales largely depended on an imbalance of females.⁵³ Those with more female labour than was necessary for home consumption would be able to sell their surplus to others with a lower proportion of women. Independent traders of both sexes and male weavers also found work filling this gap. But none of the sellers would be sustainably more productive or lower cost than others and, as everyday wear was hard to differentiate and any household could set up as a producer at any time (Xen. *Mem.* 2.7.3–6), returns would be low. Evidence of multiple looms at Olynthus and in Bau Z in Athens⁵⁴ is hard to reconcile with the total absence of any literary record of a large firm making textiles, which makes it likely that these looms were used by slaves whose duties included other tasks. Charcoal making is another field with a standard product and no basis for cost advantage that is open to anyone.⁵⁵ Given Athens' state of technology, selling prepared food⁵⁶ and some simple metal work⁵⁷ might have been similar. We should never expect large firms in businesses like these.

There was another class of products in which a craftsman could achieve a reputation that would differentiate his products and either get better prices for them than others could – or at least have more confidence in being able to sell whatever he produced at the going rate. Decorating pottery was one such business (Ar. *Plut.* 513–514; Pl. *Resp.* 454c, 601c), as were bespoke shoemaking,⁵⁸ sculpture⁵⁹ and the manufacture of corselets (Xen. *Mem.* 3.10.9). Individually concocting cosmetics required some degree of skill and personal credibility, and brand recognition seems to have been important (Theophr. *De Od.* 7–13; 57–60; Pherecrates fr. 149 K–A). In areas like these, there were no restrictions limiting those who could enter the business and no basis for cost advantages because raw materials were standard commodities and the cost was individual labour. Importantly, there was no basis for expansion either. The perceived quality advantage attached to the individual; adding volume made by someone without the same reputation among customers would incur the same risks as the maker of coarse wares would. Bespoke and highly specialized crafts therefore remained the preserve of master craftsmen in small workshops.

None of these crafts lent themselves to the formation of large production units. They all lacked barriers to entry and cost advantages, so that any attempt to gain market share through price-cutting was ultimately doomed to fail. In some crafts, individuals could make a good living through work that was highly regarded by certain customers, but that regard was for the individual and might not extend to a large workshop in which most of the work was

done by others. Where the individual's contribution was not central to the buyer's decision, expansion was possible but only for workshops with barriers to entry.

Some manufactures are endowed with barriers to entry through geography or official regulation. Pantaenetus' ore refining business is an example of the former. In such a business there would be a significant benefit in being first to establish an operation near a particular mining site; new entrants would find it hard to attract customers once local relationships had been established.⁶⁰ A logical industry structure would consist of a number of local monopolies with their boundaries roughly defined as a function of transport costs. Pricing would be constrained to the level above which customers would choose to ship the product further afield or process it themselves. Some agricultural activities such as contract olive oil pressing would have had similar economics.

An industry in which large firm size might have resulted from official regulation is tanning. Tanneries are dirty and smelly and contaminate water supplies. One decree constrains their location relative to a temple in rural Attica (*IG* i³ 257).⁶¹ In Athens, they were almost certainly not allowed to operate within the city walls. The first few entrepreneurs to establish themselves in prime sites outside the wall, at a location with plenty of water and conveniently placed for customers, would leave no scope for newcomers. Similar considerations might have applied to the dyeing and fulling of textiles, although evidence is scant for Classical Athens.

In addition to barriers provided by location or regulation, barriers to entry can also stem from competitive advantage in product differentiation and branding. Here, we might consider three examples: (1) the shield factories of Lysias and Polemarchus and of Phormio (which, as noted previously, might be the same factory); (2) the workshops of knife-makers and (3) furniture-makers belonging to Demosthenes' father. As noted, each shield took six to eight people three days to make, much of which involved four of them walking around a lathe. If Lysias is not exaggerating, his factory must have employed at least fifteen teams; even if he is, it might be ten or more. In knife-making and furniture production the Demosthenes brand must have been able to capture significant market share.⁶² It seems reasonable to posit that this ability to win more share than was required to occupy a single production chain was due to product preference – shields were supposed to save one's life, so it was sensible to buy from the best workshop, the quality of knives matters and the very notion of luxury furniture involves product preference. New entrants would find it hard to persuade customers to take a chance with an unknown product. Although it is harder to speculate on how labour was divided in the Demosthenes family workshops, it is likely that they worked in teams like the shield makers or Xenophon's shoemakers (*Cyr.* 8.2.5).

Another example of a barrier created by competitive advantage might be cosmetics and perfumes. We have noted how the skills involved in customised preparations might enable a sole practitioner to make a good living, but we also know of a perfumery with a supervisor and three slaves (Hyp. 3.6–10). The likely reason that some perfume businesses were able to expand lies in the barrier to entry provided by the cost of inventory, as well as the competitive advantage that results from this. Three slaves would require access to a large range of expensive ingredients, and the wider the range they could draw from, the better their chance of winning business. A large enterprise could offer customers a much wider range of products than could a sole practitioner of middling means, or a new entrant. The absurd price paid by the oversexed Epikrates should not obscure the fact that inventory would have been a very important consideration. Demosthenes' inheritance included a large investment in materials for his workshops so, in addition to the workshops' reputations, working capital needs might have inhibited entry in those cases too.⁶³

CONCLUSION

Bringing these observations together enables us to see how different manufactures lent themselves to different firm sizes and to different potential for generating income above subsistence levels. It might also suggest a basis for deciding when terms like “industry” and “factory” can legitimately be applied in ancient times.

As [Figure 6.6](#) shows, each type of business offered different employment or ownership opportunities. Larger units (those with barriers to entry) were staffed by slaves. It would have been dishonourable for a citizen to sign up to be employed by another on a continuing basis (Isae. 5.39; Isoc. 14.48). These large workshops or factories might be owned by citizens, metics or freed slaves.⁶⁴ They might be located in the owner's home, but they would have been clearly demarcated from the domestic part of the household. They were probably for the most part run by a slave foreman paying a fixed sum to the owner (Dem.27.9; Aeschin. 1.97).

Smaller units were the workplaces of citizens, metics and freed slaves. All members of the household might participate, but the crafts did not lend themselves to the cost of engaging additional labour. The key to whether they could bring in an attractive income was the potential to differentiate the product. Crafts in which this was possible would have been attractive to anyone willing to work hard and with enough skill to create demand for his particular output. Others could spend time on civic or military duties, working their farms, attending festivals and philosophising while still occasionally making goods for sale or home consumption.

Potential for Differentiation		Barriers to Entry	
		Yes	No
	High	Ia. Differentiated Industry Shields Knives Luxury Furniture Cosmetics and Perfumes	Ila. Differentiated Craft Bronze armour Fine textiles Shoemaking Decorative pottery
	Low	Ib. Undifferentiated Industry Tanning Ore processing Primary food processing	Ilb. Undifferentiated Craft Commodity pottery General metal work Secondary food processing Textiles
	Ownership	Citizens, metics, freed slaves	
	Labour	Slaves	Owner + slave(s)

6.6 Competitive Advantage and Industry Structure (P. Acton).

The framework adumbrated in this chapter provides an important missing piece in the puzzle of why the sizes of different enterprises in classical Athens varied. It shows that firm size responded to the same basic rules of microeconomics that determine firm size today, albeit with very different results, owing to very different levels of technology. A depiction of how the Athenians lived that takes full account of what they consumed and how they earned an income would probably look more like a painting by Hieronymous Bosch than by Raphael: streets humming with the noise, filth and smells of large, busy factories and crammed with carts transporting their raw materials and finished goods. In the more salubrious areas small workshops of skilled craftsmen, (metics, freedmen and citizens), would seek superior returns for their superior skills.

In all these industries, technology has changed the dynamics of competition; craft potters cannot compete against Wedgwood's successors, textiles are made on massive machines and by third world labour, and computer controlled design and manufacturing has transformed metalwork. It is hard to participate in manufacturing except on a full-time basis. The implications for social and political structures have been immense.

NOTES

¹ Kron 2011.

² Clark 2002: 830–48; Kron 2005; Ober 2010a: 9–16.

³ See van Alfen, Chapter 12 in this volume.

⁴ See Davies 2007: 352. On slave imports, see Lewis, Chapter 14 in this volume.

⁵ See Morris 2010: 30–50.

- 6 See Morris 2005: 91–126; Tucker 1907: 64–6; Richter 1966: *passim*; Andrianou 2006. The mix of non-agricultural activity seems to have been similar to that in much later societies, such as North India under the sultanate in the thirteenth to fifteenth centuries (Habib 1982). Neither then, nor under the Mughal emperors of the next three centuries did Indians spend much on housing, although they spent heavily on luxury goods (Raychaudhuri 1982).
- 7 Meier 1993.
- 8 Burford 1972.
- 9 Harris 2002a.
- 10 Cohen 1992.
- 11 Harris 2006: 138–279.
- 12 Bresson 2000; 2007.
- 13 Davies 1998; 2001; 2005b.
- 14 For innovative analysis of economic matters, see especially Osborne 1991, 1992; Morris 2002; Andreau 2002.
- 15 Horden and Purcell 2000: 30. Cf. Harris 2002b: 67. 2002a.
- 16 Glotz 1926: 142.
- 17 Hopper 1979: chapter 7.
- 18 Finley 1973: 116 with note 58 on Dem. 27.9–11.
- 19 Humphreys 1970: 21.
- 20 E.g. Aeschin. 1.97; Xen. *Vect.* 4.14; Dem. 27.9. A slave's owner, or the owner of a gang of slaves, received a fixed sum so that any profit and loss was taken by the foreman.
- 21 Scheidel, Morris and Saller 2007: *passim*.
- 22 Cohen 1992: 26.
- 23 Dem. 36.4. On the numbers of slaves, see Sargent 1924: 97–8.
- 24 Arist. *Eq.* 44; van Driel-Murray 2008: 491.
- 25 [Arist.] *Ath. Pol.* 27.5; Xen. *Apol.* 29; Davies 1971: 40–1.
- 26 Australian Bureau of Statistics, Business Operations and Performance 2000–1; Eurostat 2012.
- 27 E.g., Glotz 1926: 206; Hopper 1979: 103; Bresson 2007: chapter 7; Wilson 2008: 393–5.
- 28 Smith 1999 [1776]: 1.
- 29 Henderson 1981; Stern in Stern and Stalk 1998: 9–23.
- 30 Coase 1937: 386–405.
- 31 Bresson 2007: chapter 7.
- 32 According to a contemporary maker of hoplite shields, Mr. Craig Sitch of Manning Imperial, Redan, Victoria, Australia, a team of six to eight workers using only human power could produce a shield in three days. Four would be walking the shield round a lathe; one or two would be sawing, shaping and gluing wood for the next shield to be turned; and one or two making accoutrements for the previous one.
- 33 Thompson 1982: 74.
- 34 Note that where the scarce resource is not capital but labour, the equivalent of the cost of capital is the price of subsistence. If an individual cannot survive by applying his labour in a particular product-market, he will need to find another form of work.
- 35 See Hyp. 3.9–10 with Reger 2005: 260–72.
- 36 See Chandra 1979: 23; Ogden 1992: 41–55.
- 37 Glotz 1926: 268.
- 38 *Horoï* nos. 7 (*ergasterion*), 87 (*oikia* and *ergasterion*), 88 (*ergasterion*), 89 (*ergasterion* and slaves), 90 (term *ergasterion* restored), 90a (*ergasterion*), 91 (*ergasterion*), 92 (*kaminos* and *edaphe*), 92b (*kapeleion*), 161 (*ergasterion*) in the collection of Finley and Millett in Finley 1985a.
- 39 *Horoï* 7 (750 dr.), 87 (6,000 dr.), 88 (6,000 dr.), 90 (700 dr.), 92b (500 dr.).
- 40 Security worth double the amount of the loan: Harris 2006: 180 with note 56.
- 41 See Harris 2002a: 81.
- 42 Shipton 2002: 133.
- 43 There would not have been room in the dockyards for all the textile metal and wood trades who made boat components to make them on site. See Morrison in Morrison and Williams 1968: 280–301; Coates 2005. Gabrielsen, 1994: 144–45.

- 44 See Randall 1953.
- 45 The most noted examples of asset turn advantages are steel mini mills (new recycling technology) and retailing (inventory management systems). For the prices of slaves in Athens, see Scheidel 2005.
- 46 As a definitional matter, in the absence of formal restrictions on the number of people who could qualify to conduct a craft, the need for apprenticeship cannot be considered a barrier to entry, as there is no limit to the number of people who – in theory at least – could undertake the apprenticeship and enter the business. In some cases, the degree of skill required might be so high that few can succeed and this can result in excellent returns for the accomplished practitioners and poor ones for the less competent, but this is better considered as a differentiator among competitors than as a restriction on entry.
- 47 This framework is adapted from Stern in Stern and Stalk 1998: 56–9. In the diagram, circle size indicates firm size and slope represents the correlation between competitive advantage (x axis) and profitability.
- 48 Jones, Sackett and Graham 1962: 88; Rotroff 1997: 72–7.
- 49 On the tasks – namely clay preparation, wheel turning, forming, materials handling and furnace management – see Richter 1923: 4–20; Noble 1965: chapter 4; Clark 1994: 128–63.
- 50 The analysis was conducted by physical modelling, since there is no mathematical formula for ‘circle-packing.’ Measurements were taken from a sample in the Classics and Archaeology section of the Ian Potter Museum at the University of Melbourne.
- 51 Note that some potteries supplying transport vessels might have been able to strike long-term contracts with merchant customers – see Johnston 1979: 52. There might have been multi-furnace potteries in this segment, just as there were in Roman times when there was a large and stable export demand for *terra sigillata*, but there is no clear evidence for such potteries in Classical Athens.
- 52 Finley 1954: 78; Matyszak 2008: 25.
- 53 Carr 2000: 163–6.
- 54 Olynthus: Cahill 2002: 246–52; Bau Z: Tsakirgis, Chapter 7 in this volume.
- 55 See Emrich 1985; Olson 1991.
- 56 See Davidson 1997: 42–6, 53; Harris 2002a: 88–97.
- 57 See Forbes 1964–72, VIII: 55–67; Snodgrass 1980: 128, 214.
- 58 See Burford 1972: plate 3.
- 59 See Stewart 1990: 22–6.
- 60 On mining, see the remarks of Christesen 2003.
- 61 Sokolowski 1962: 19; Billot 1992: 119–56.
- 62 The likely output of such a number of slaves would have accounted for a large part of any reasonable estimate of demand.
- 63 This included 80 mnai worth of ivory, iron and wood, plus 70 mnai worth of copper and gall (Dem. 27.10), i.e., over two talents’ worth of raw materials.
- 64 Note, though, that only citizens could own land. Metics would have to rent their premises unless given special permission to own land and buildings by the Athenian *demos*.

WHOLE CLOTH

Exploring the Question of Self-Sufficiency through the Evidence for Textile Manufacture and Purchase in Greek Houses

Barbara Tsakirgis

With their unprepossessing form, loom weights are the most numerous surviving evidence of textile work in the Greek world. As humble as these little objects are in appearance, by examining their find spots and those of the whorls used to spin thread, and by focusing that research in houses and other private buildings, we can begin to answer the question of who made the Greeks' clothes and household textiles during the Classical period. While this chapter surveys material from throughout the Greek world, my object is to lay the foundation for a detailed study of Athenian domestic textile manufacture. This chapter considers whether the evidence provided by the weights and other equipment used in textile production and recovered from the remains of houses supports the idea that members of the *oikos* produced cloth beyond what was needed for consumption by the household itself. If this contention is correct, the remainder of the woven goods could be sold at a profit, thus engaging the family directly in the market economy of the *polis*.

This chapter is not the first to ask who made the Greeks' and specifically the Athenians' clothes and domestic textiles. In her doctoral dissertation, Reuthner (2006) begins with just this question. She employs both literary and historical testimonia as well as studies of economic history and scholarship on the *polis* of Athens in order to examine the Athenian material. Reuthner analyzes attitudes toward housework by comparing the ancient evidence with testimony from the fourteenth century through the twentieth century. She does not, however, address the material remains for cloth manufacture in ancient

Athens, whether that evidence was recovered from domestic settings or from *ergasteria*. Reuthner's omission provides the opportunity to present here the archaeological evidence for domestic manufacture of cloth and clothing. By using different sources, Reuthner and I reach some of the same conclusions.

Wool and flax, the two fibers most commonly spun and woven by the Greeks, are both subject to rot and thus few traces of ancient Greek cloth have survived; those that do survive were recovered exclusively in funerary contexts, such as from tombs at Koropi (Attica), Eleusis, the Athenian Kerameikos, Kalyvia, Pherae, and Kerch in the Crimea.¹ In Greek antiquity, both woolen and linen threads were woven on the warp-weighted loom (Barber 1991: 91–113), although we know that smaller scale weaving was accomplished on the back-strap loom and tablets, both of which have left no remains (Clark 1983; Jenkins and Williams 1985). The warp-weighted loom was fashioned from two long beams that stood against a wall and its vertical warp threads were held taut by weights tied to their ends; in contrast, the warp threads were kept straight and tight on the back-strap loom by being anchored to the weaver's body.² The focus in this paper is on the textiles woven on warp-weighted looms, but because such looms were composed of wooden beams and crossbars, none has been recovered from an archaeological context in Greece. Three warp-weighted looms are reported to have been found in a Hellenistic context at Tel Bet She'an in Israel but their details have not yet been published (Cassuto *forthcoming*). Two footing blocks, probably intended as counterbalances for the vertical beams of a loom, have been recognized in an inner room next to the hearth room in a house at Orraon and a further two blocks similarly positioned were found in a second room of the same house (Dakaris 1986: 124; Hoepfner and Schwandner 1994: 148). Several black- and red-figured vases provide limited but sufficiently detailed depictions of looms to allow for the reconstruction of the process of textile production in Greece.³ The validity of the reconstructions, based on the painted depictions of looms on Greek vases, was confirmed by the nearly identical warp-weighted looms still in use in Norway and Northern Finland in the late 1950s, although the Nordic weavers used large and rudely formed stones instead of shaped clay weights to keep the tension on the warp threads (Hoffman 1960).

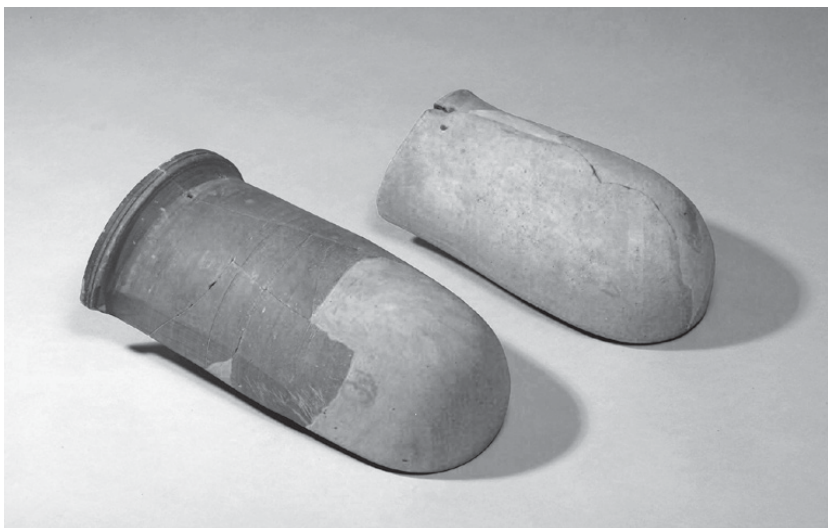
Loom weights are often found in some number among the domestic assemblages of Greek houses, although in many excavations large numbers of weights are housed uncatalogued in the storerooms. The survival of Greek loom weights, and thus the solid evidence for textile manufacture, might not be as complete as has previously been assumed. There is ample evidence from several periods that loom weights were sometimes fashioned of unfired clay. In his study of the large-scale weaving operations at Gordion in the Iron Age, Burke (2010: 116–8) has noted that most of the loom weights used at the central Anatolian site were originally shapeless lumps of sun-dried mud,

although some weights were unintentionally preserved when they were baked hard in the conflagration that destroyed the Phrygian weaving complex. At the Hellenistic site of Euesperides in Libya, the loom weights were also fashioned from unfired clay, but unlike the earlier weights at Gordion, the latter were formed in imitation of the conical terracotta loom weights used at contemporaneous sites in mainland Greece (Megias and Wilson 2008: 52). At several sites in Greece, a few metal weights appear in publications, and we must ask whether clay weights were also used in the houses there, but not recorded by the archaeologists, or whether metal weights were routinely used and some were later melted down so that the valuable metal might be used for other purposes.⁴ The practice of recycling, of both metal and clay, is amply attested in Greek houses, the first material reused because of its value and the second because of its abundance.

Spinning was an essential first step in textile production and the stone and terracotta spindle whorls used to increase the force of the rotation of the spindle must be included in any consideration of domestic textile manufacture. Because the whorls are fewer in number than the weights, they are often overlooked in discussions of household textile production, and some putative whorls might have been large beads rather than implements for textile production. As most spindles were wooden, few survive. Whorls, too, were sometimes fashioned of wood.⁵ Terracotta covers for the thigh (*epinetra*) were used for preparing roves of wool before the spinning began (Barber 1991: 45), but they are not represented in large number in domestic contexts; rather, they are best known as dedications in sanctuaries or as grave goods. The top face of the *epinetron*, often decoratively incised with a scale pattern, provided a rough surface for separating debris from the fibers and beginning the process of spinning the rove of fiber into thread (Figure 7.1).

Heinrich (2006) has explained the seeming paucity of *epinetra* by suggesting that leather or rough cloth might often have served instead of the fragile or expensive objects to provide the necessary roughness for the task.

The mechanics of spinning and weaving on the warp-weighted loom are well known. While spinning could be done almost anywhere, even when the spinner was walking, weaving could be accomplished only by standing in front of the loom for a very long time; the common denominator of both tasks was considerable time spent doing each. Carr (2000:) proposed that the experienced Greek spinner made 100 meters of thread an hour, but experiments conducted by Mårtensson, Nosch, and Strand (2009) resulted in somewhat slower rates of spinning thread, the speed determined by the weight of the whorl. Thus a whorl weighing four grams allowed 35 meters of thread to be produced in an hour, 8 grams 40 meters, and 18 grams 50 meters. Warmer garments could be woven of two-ply rather than single-ply thread, and thus the thread for them would take longer to make; plied thread was also a practical



7.1 Agora Epinetron (P 9445, P 18605)
(Courtesy of Agora excavations, ASCSA).

choice, as it was less subject to breakage. Spinning linen thread took longer than spinning wool, since the stalks of the flax plant required both retting and pounding in order to extract the softer and more desirable inner fibers and because linen fibers are shorter than wool. Modern estimates, using a medieval technique of spinning linen, suggest a production rate of 36 meters per hour, if not less, for linen thread (Carr 2000: 165).

Locating a terracotta weight in the room of an ancient house is one thing; identifying the use of that room is another matter. Current thinking emphasizes the flexible use of space in the Greek house and both material evidence and ancient testimonia on the loom room (the *histeion*) support this conclusion (Nevett 1999: 37). The *histeion* was probably not a dedicated room; it was simply the place where the loom was erected. The loom at Orreion was set up indoors, but the find spots of weights in houses indicate that the looms might have been erected near the domestic courtyard in good weather, when the weavers might enjoy fresh air, and where they might also have the advantage of better light. The material evidence from Greek houses proves that looms could be set up almost anywhere in the house, with an obvious preference for well-lit spaces. Penelope was at her loom upstairs in Odysseus' palace (*Od.* 1.361; 15.517) and Andromache was weaving deep in the *muchos* or inner chambers of Priam's palace (*Il.* 22.440). The location of the *histeion* in Menander's *Samia* (19) is within the house, just before the storeroom door and accessible from the story above.

Once the loom was erected and the weaving begun, the loom was probably not moved and any equipment necessary to the task of weaving would be

kept close at hand. In his examination of the remains of the nearly undisturbed domestic assemblages excavated at Olynthus, Cahill (2002: 170) has proposed that a loom with weaving in progress could not be relocated; however, based on the testimony of modern weavers, Ault (2005: 78), in his publication of the remains of the Classical houses at Halieis in the Argolid, thinks that looms could be moved. No furniture was necessary for work at the loom, but a stool could be useful when the weaver was tiring of the task. Once the weaver passed the shuttle through the line of the taut, vertical warp threads, the weft was pushed into position using a comb or beater. While combs and beaters, like stools, were most often fashioned of wood, fragments of bone beaters have been excavated at Euesperides (Megias and Wilson 2008: 56). One generous donor dedicated a silver beater bar to Athena on the Acropolis in Athens, and because of the intrinsic value of the metal, it was likely a dedicatory object rather than a tool used in household textile manufacture (*IG I³* 403 lines 16–17).

Depending on the size of the cloth being woven, the loom might be well over a meter wide. Most estimates put the width of a loom used to weave a *peplos* at 1.45–1.85 meters. The number of weights used to hold the warp threads taut varies in scholarly opinion, depending on how many threads were held fast by each weight. The experiments of Mårtensson, Nosch, and Strand (2009) prove that both the weight and thickness of the weights are critical factors in both the ease of setting up the loom and the evenness of the weave in the finished product. Barber (1991: 104) argues that a loom could be outfitted with as few as six weights; most estimates for a full loom number range from twenty to forty weights (e.g., Hoffman 1960: 24 ff. [13–59 weights]). Some scholars propose many more, with the higher number predicated on the use of smaller weights (Davidson 1952: 147; Davidson and Thompson 1943: 70; Sofianou 2011: 425).

Ornamentation of the cloth and the sewing of those textiles which required more than weaving and wrapping around the body added to the total production time of any garment or household textile. While embroidery was not common in Greek clothing, Loftus (1998: 15) has argued that it was introduced to Athens for luxury garments in the fifth century BCE, perhaps as both workmen and clothing were imported from the eastern Mediterranean. Examples of cloth with designs woven into the fabric are known from both vase paintings and sculpture as well as from the Panathenaic *peplos* with its woven depiction of the Gigantomachy (Barber 1992: 112–17).⁶ The textile fragment from Koropi was once similarly embroidered with gold thread wrapped around a silk core (Miller 1997: 80–1). The process of dyeing would also add to the time needed for creating garments. The very recognizable murex shell does survive in the archaeological record, but few if any have been recovered from domestic contexts to indicate domestic dyeing in the Classical period. The absence of murex in houses is due either to the expense of the mollusk or to the

horrific odor produced when it was heated to extract the dye-secreting gland. Other plant and earth-derived dyes, cheaper and more easily obtained, might have been employed in domestic textile production such as that referred to in Aristophanes (*Ecl.* 216).

Given the processes I have detailed for the stages of making and ornamenting woven goods, the impression is that making clothes and fabric furnishings for the home was extremely time-consuming. Barber (1992: 110) and others have speculated that the average Greek woman spent a very significant percentage of her waking hours making textiles, whether she was involved in one, several, or all the stages of production. Carr (2000: 165) estimates that for a family with three free adults, a child and two slaves, textile production would take thirty-eight to forty-seven hours of work per week for three of the adults. Although Barber (1994: 30) believed that women could spin while rearing children, Nixon (1999) has used ethnographic parallels and testimonies from contemporary weavers to argue that weaving and childcare were mutually incompatible. Nixon believes that children serve as too great a distraction to the weaver and too much a danger to the quality of the work produced and so would be excluded from the workroom. With the other necessary duties of daily domestic life – such as the preparation and serving of food; the bearing, nursing, and rearing of children, to name just a few – it is worth asking how much time members of the *oikos* had to produce surplus thread, cloth, or garments for sale outside of the home. It is even reasonable to ask whether the household had the time to produce enough textiles to supply the home without resorting to purchase. The answer must lie in that known but great unknown, domestic slaves, who are visible in the literary and epigraphic record but, according to Morris (1998), are ‘invisible’ in the material record of the household. The more slaves and free women resident in a home, the more cloth could be produced, and there is evidence, albeit disputed, that the numbers of wool-working slaves was rather large. Gomme (1933: 42, footnote 9) and others (e.g., Meyer 2010: 15, 70) who have studied the Athenian *phialai*-inscriptions have noted that females outnumbered males in the occupation of manufacture and that forty-four of forty-eight women mentioned were wool workers (*talasiourgoi*). Still a matter of some debate is whether these latter were metics, manumitted domestic slaves, or those employed in a commercial enterprise.⁷

In order to ‘excavate’ this question further, I present a survey of loom weights and spindle whorls and their find spots in domestic and other private settings. The presentation begins in Archaic Athens and includes material from numerous Classical *poleis* as well as from Hellenistic sites; the latter will serve as both parallels and contrasts with Classical Greek practice. In the interests of space, and because the practice differs considerably, this survey does not include the evidence for Roman commercial textile manufacture (see, e.g., Vicari 2001).



7.2 Agora Deposit J 2:4, Loom Weight MC 1506
(Courtesy of Agora excavations, ASCSA).

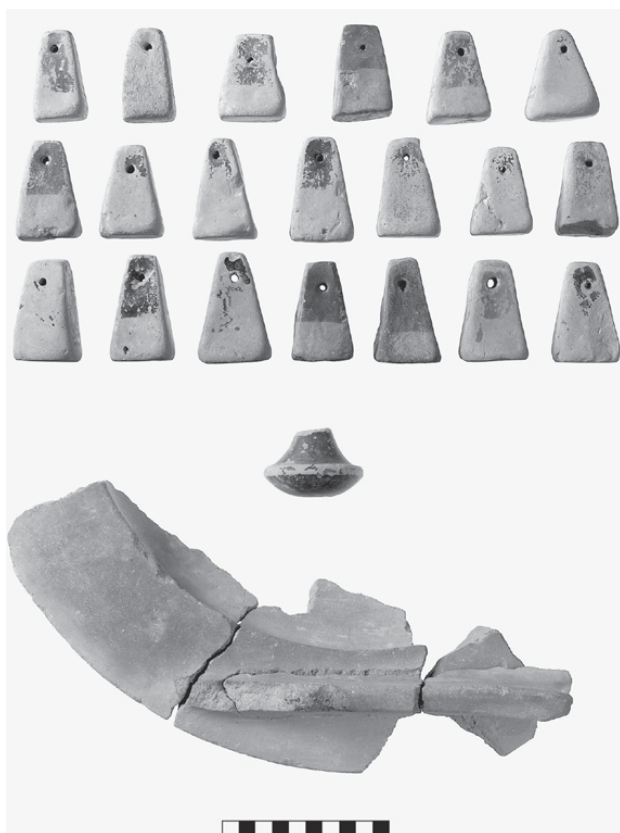
The present chapter is a work in progress, as some of the material I had hoped to present is, as yet, unavailable for study.

Unfortunately, the houses and many of the buildings of Athens suffered not only several damaging attacks over the course of history, but also, from the archaeologist's perspective, several equally damaging clean-ups. Consequently, loom weights have rarely been recovered from a primary domestic deposit other than a well in the city. Limited evidence for domestic weaving in Archaic Athens comes from the deposits of Persian destruction debris published by Shear (1993).

One, two, or even as many as four weights were recovered from the deposits, many of which were undoubtedly the results of the debris from a destroyed house being used to fill an abandoned well.⁸ A similar deposit, Well J 2:4, is located to the north of the Agora space and its contents probably represent a significant percentage of one home's domestic pottery, both fine ware and vessels for food preparation and service (Lynch 2011: 75–146). Among these vessels were eleven loom weights (Lynch 2011: 291; Figure 7.2).

For the Classical period, numerous weights and spindle whorls were recovered from the fill on the slopes of the Pnyx (Davidson and Thompson 1943: 65–96); the weights were once used in the houses demolished to make way for the latest expansion of the Athenian public assembly place. In my reading of the pottery recovered from the archaeological contexts of the houses excavated around the Agora, I have encountered singletons, or even two or three weights, but there are only two significant clusters of weights from the Classical houses. The largest collection of loom weights in an Athenian domestic context is more significant in its find spot and associated assemblage. Twenty pyramidal loom weights, dipped in slip and clearly a set, were found in Room 9 of House C in the Industrial District (Young 1951: 206; Figure 7.3).

The excavation reports do not specify whether the weights were found in a line or in a heap, a detail that would indicate whether they fell from a loom or were in storage. One spindle whorl and a fragment of an open-pan brazier were found with the weights in the room that opens off the courtyard of the



7.3 House C in the Industrial District, Loom Weights, Spindle Whorl and Brazier Lot NN 590 (Courtesy of Agora excavations, ASCSA).

house (Tsakirgis 2005: 76). The brazier could have been used to heat water for dyeing, but it equally might have provided heat or light to the room if this is where the loom was set up. MacKinnon, who has recently surveyed the faunal material stored with the context pottery from the Agora excavations, has confirmed that there are no significant finds of murex in domestic contexts of the Classical period to support the proposal that the Athenians used murex for dyeing in the household manufacture of textiles (pers. comm.). The high cost of the murex, 3 *mina* for a purple garment in the fifth century BCE according to Plutarch in the *Moralia* (470), deterred small-scale purple dyeing in domestic settings.

A second, smaller cluster of nine conical weights was found in Room VII of the SE House in the Classical block on the slopes of the Areopagus (Figure 7.4).⁹

The conical shape was popular throughout history in Corinth and may have been disseminated from there to other parts of Greece in the Late Classical and



7.4 Classical Houses on the Areopagus, 9 Loom Weights (Deposit K 17:2)
(Courtesy of Agora excavations, ASCSA).

Hellenistic periods (Davidson 1952: 146–56). The nine weights from Athens are made of a clay paler than the typical Athenian fabric and may be imports. The group of Athenian conical weights is perhaps not large enough to equip a loom, but the context material confirms a fourth-century date for them and for their deposition.

Larger collections of weights do occur elsewhere in Athens in the Classical period, but the contexts are probably not primarily domestic. Very large quantities of as yet unpublished weights were found in a well deposit (U 13:1) on the eastern limits of the Agora, in a district likely occupied by wine shops (Lawall 2000).¹⁰ The precise number of the weights has yet to be determined, as some are currently stored in an inaccessible location; however, estimating from the references in the excavation logs and the weights that I could examine, there are at least 507 (Figure 7.5). The weights are relatively uniform in size; to judge from those I have measured, the weight and uniformity of their shape suggest that they comprise a collection belonging to professionals rather than the haphazard collection that might result in an ordinary household.

Putative commercial establishments for weaving, such as those at Olynthus discussed herein, seem to be characterized by sets of weights of uniform dimensions and weight, features that would ensure that the cloth was regular in its weave. The weights in Deposit U 13:1 would have been sufficient to equip many looms, far beyond the number necessary to produce cloth for a single family. Here we must be looking at an industrial operation, perhaps the working space of the wool-workers (*amorgantinos*, *huphantikos*, *sindopoles*) identified



7.5 Athens, Agora Deposit U 13:1, Select Loom Weights
(Courtesy of Agora excavations, ASCSA).

by Harris (2002a) in his study of the epigraphical and textual evidence for occupations in Classical Athens.

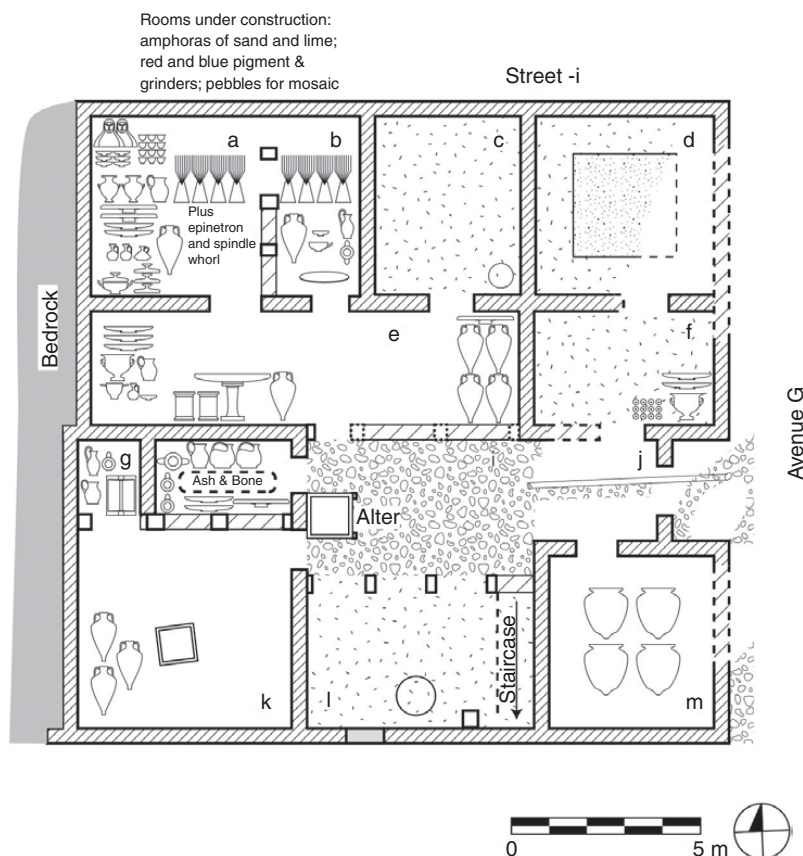
More puzzling in Athens is the great number of loom weights recovered in the German excavations of Building Z, in the area beside the Sacred Gate, a neighborhood identified by the excavators, citing Isaeus (6.20), as a red light district in the Classical period. The German archaeologists identify the two earlier phases of Building Z as a large house (Knigge 2005: 6, 28), although its plan is rather unlike those of contemporaneous houses elsewhere in Athens. In phase three, the configuration of the rooms was altered and there is considerable evidence for textile work. At least 153 loom weights were found in Bau Z³ (Knigge 2005: 71), with distinct clusters of them appearing in at least eight rooms. The excavators have recognized certain intriguing objects such as a silver pendant of Cybele or Astarte as foreign imports, belonging perhaps to the workers toiling in the building. Knigge identified Building Z as a brothel *cum* textile factory in its third phase, explaining that the textile work would have occupied the prostitutes when they were without customers to service. Loftus (1998: 17) has offered the somewhat less salacious identification of the building as a commercial textile factory and credits the eastern cultural influences evident in the finds such as the silver medallion as due to the influx of eastern textile workers into Athens in the Late Classical period. What is indisputable here is that cloth production was going on in Building Z beyond the needs of a single household.

Confirmation of the industrial activity in Building Z may come from the several pyres recovered from under its floors in phase 3. Rotroff (2009: 43) has convincingly connected the deposition of similar pyres recovered in both shops and houses around the Agora as motivated by workshop activity and the attempts by the artisans to ward off the dangers inherent in many trades. The pyres contain miniature vessels of several recurring types (especially saucers and *chytriai*), fragmentary bones of ovicaprids, and distinct traces of burning, and are found in private buildings where evidence of industrial activity is also present. Spinning and weaving would have caused less severe injuries to the workers than would firing pottery and working metals, but the deposits were likely intended to ward off danger to the product as well as to the producers.

The material evidence for spinning and weaving in the farmhouses in the Attic countryside is slight, but does exist. One whorl was found outside the Vari house and two whorls and two weights were recovered in the Dema house (Vari: Jones *et al.* 1973: 373; Dema: Jones *et al.* 1962: 83). If sheep were pastured near these Attic farms, the first stage of textile production might have begun in the countryside with the pasturing of the flock and the shearing of wool. A rural site where evidence for spinning predominates over that for weaving is Classical Pylos (Coleman 1986: *passim*). One house there contained eight loom weights, another had just one, but 118 whole or fragmentary spindle whorls were found there. This might be another instance of wool being spun near the site where the sheep were pastured and shorn.

Outside of Athens, the evidence for textile production in Classical houses exists, but is often scanty. Only a few lead weights appear in the publications of the Priene houses, whether from their original Classical phase or their Hellenistic rebuilding (Wiegand and Schrader 1904: 322). Similarly, seven lead weights and one of iron were catalogued from the houses at Thasos (Grandjean 1988: 262). While it is possible that unbaked clay, rude stones, or more metal weights were used in the houses at these sites to weight the warp threads, nothing else survives to give evidence of textile production. The evidence is stronger at Orraon, where stone supports in an inner room once served as counterweights for the vertical beams of the loom resting against one wall and associated weights prove that the supports served a loom. A second loom was set up in another room of the same house, as similar stone supports and weights attest. At late Classical Halieis, eight to twenty-five loom weights were found in each of five houses (Ault 2005: 78, 111, 117, 122, 128, 136). No spindle whorls were recovered. The greatest number of weights was found in House E, although all twenty-five were in the same room (Ault 2005: 136). The evidence indicates textile work, but not the extent of that production.

In western Greece, there is considerable evidence for weaving recovered from the Classical houses at Himera. In Insula II, which comprises ten houses,



7.6 House of Many Colors, Map of Distribution of Finds
(Courtesy of Nicholas Cahill).

373 weights were found, or an average of just over thirty-seven per house, although this simple division does not accurately reflect the fact that some houses contained many more weights than others, a situation analogous to that in the houses at Olynthus (Allegro 2008: 213–18). In the broad room 49 south of the courtyard of House Lot 4 in Insula I at Himera, the domestic assemblage included transport amphorae, cookware and tableware, lamps, two *louteria*, and two figurines and fourteen loom weights (Allegro 2008: 187). The association of tools for weaving with household pottery parallels the association of finds at Olynthus.

The best evidence for textile production on both the household and the industrial scale in Classical houses comes from the 102 houses excavated at Olynthus. Based on the clusters of loom weights, forty-three rooms in thirty-five houses were identified as places where weaving took place (Cahill 2002: 175; Figure 7.6).

Immediately we should ask the question, where did the sixty-seven other households obtain their clothing and cloth furnishings? In the poorly preserved Villa CC, forty-three weights were found having fallen in a row 1.1 meters long, the best evidence at the site for a loom erected at the time of the destruction by Philip's troops (Cahill 2002: 171). While one room at Olynthus contained seventy-four weights, twenty-five rooms contained ten to twenty-five, seven rooms contained twenty-five to forty-three, and five rooms had more than forty-three. The rooms with textile implements were quite various in their location in the houses, although almost every one had clear provision for light. Weaving took place in seven *pastades*, five courts, and two *exedrae*. The most complete weaving assemblage came from the House of Many Colors, where forty-one loom weights, a spindle whorl, and an *epinetron* were recovered.

Most of the finds I have just cited constitute evidence for textile production to meet the needs of the household, but the great number of loom weights recovered from some Olynthian houses suggest the commercial manufacture of textiles in these residences. House Av9 contained loom weights enough to stock four looms. Houses Aviii7 and 9 were combined into one dwelling and two large clusters of loom weights were found here, 247 in the *pastas* (roofed northern portico) and 50 in a nearby room. House Aiv9 contained 133 weights and Houses Av10 and Avii9 contained 88 each. In all of these buildings, the pottery assemblages represent living on a scale beyond the needs of a few shop slaves and it is reasonable to identify the buildings as houses. One marked contrast between the finds in the houses where cloth was manufactured for household needs and those where evidence suggests commercial production is that the loom weight sets in the first were composed of a varied collection of different sizes and shapes, while those in the latter were quite uniform in shape and weight. The consistency among the weights suggests that the cloth produced in textile factories was made to more exacting standards with weights of the same size, used to make the weave even. The weights from the putative commercial factories were also of recognizably lighter weight than those from the houses, indicating that the professional weavers were producing finer textiles than those made in the home.

The distribution of loom weights in many Hellenistic houses parallels that recorded from the Classical houses, even though many houses of the later period are more extensive in their ground plans with separate areas of the residence devoted to entertaining and domestic tasks. No loom weights are published from the houses at Eretria, but several were found in pyre burials at the site (Metzger 1978: 81–8). Only singletons were recovered from the houses at Hellenistic Morgantina, which was abandoned at the end of its life, thus providing the residents the opportunity to remove all useful items (Tsakirgis forthcoming). Deonna (1938: 154) admits bluntly that most loom weights found in

the houses on Delos were not catalogued. Two loom weights appear in the publications of the peristyle houses at Pergamon (Pinkwart and Stammnitz 1984: 120). The hearth room in House I at Kassope had ‘many’ loom weights, although the exact number was not specified (Orlandos 1977: 76). The excavators interpreted the shells found with the weights at Kassope as evidence of cloth dyeing although the mollusks did not appear in great numbers.

The weights found in the houses at Hellenistic New Halos in Thessaly parallel the Classical examples cited here in both number and find spots. There is evidence that the Thessalians raised animals for wool, and Haagsma (2010a: 202) suggests that the age-estimates of the animal bones recovered from the site support this contention. The preponderance of the bones belonged to older animals, that is, those kept for their wool production, rather than from younger animals that were slaughtered for their meat. While five of the six houses each contain 11 to 37 loom weights, with an average of 21 each, in the House of Agathon 139 were found. Most of the weights were located in a room identified as a storage area, but nonetheless, the sheer quantity recovered in this one house indicates production beyond the needs of a single family. In the other houses, the weights were recovered in side rooms with little natural lighting. The houses at Kallitheia in Thessaly also contain ‘a number’ of loom weights (Haagsma 2010b) and the excavator speculates that there, as at Halos, there was textile production in excess of one family’s requirements. At both sites, Haagsma argues, the surplus woven goods were exchanged for cereals to feed the family.

In the Hellenistic rural villa at Tel Anafa in Israel, Larson and Erdman (forthcoming) posit textile production on a moderate household scale with some suggestion that textiles were traded for the luxury goods that were found at this inland site. In the first Hellenistic phase of the building, sixteen whorls and forty weights were found, fifteen of the latter in a cluster. In the late Hellenistic phase, over 100 implements for textile production were recovered. As at Pylos and Halos, the higher proportion of whorls to weights, in contrast to the evidence from the urban sites, might indicate the local shearing of wool and the spinning of thread.

In the houses at three other Hellenistic sites, scholars have recognized evidence of commercial production of cloth. The excavators of the terrace houses at Florina in Macedonia have proposed that the large numbers of weights found in one house give evidence of production beyond the needs of the household, but they do not publish the number of weights recovered there (Lilibaki-Akamatis and Akamatis 1990: 71). At Euesperides in a house of the third century BCE, seventy-two loom weights were found in a rough line on the floor; the excavators suspect that there may originally have been more weights, but they were not recoverable or even recognizable due to having been made of crude brick (Megias and Wilson 2008).

The configuration of the find spots indicates that the weights had fallen from a loom erected in the building. Ten spindle whorls were found in the same house. In a second area of the site, 101 loom weights were found and in a third, 41. Evidence here of sherds pierced and reused as loom weights shows that many more such weights created from recycled materials might have been excavated in Greek houses everywhere but were not recognized as such. Also recovered from the Libyan Greek houses were the fragments of two bone beaters, used to tamp the weft tight. The commercial works at Euesperides included dyeing as well as weaving, as attested by the pounds of murex shells crushed in the streets and found in an industrial oven, where they had probably been heated in the process used to extract the purple dye (Megias and Wilson 2008: 57).

Dye works have also been posited by Kardara (1961) for the Hellenistic houses on the Rachi at Isthmia, although Anderson-Stojanović (1996: 92) argues more convincingly that the vats dug into the floors of the domestic courtyards were for the pressing of olives for oil, a production that may have been on an industrial scale. The largest collection of weights for any house at Rachi numbers fourteen (Anderson-Stojanović 1996: 82). The industrial production of cloth, from the raising of sheep, importing of wool, carding, spinning, and weaving of cloth and the process of dyeing with expensive plant and murex-based dyes, is amply attested in the many papyri of the Zenon archives. Loftus (2000) has proposed that the large-scale production on the estate of Apollonius was intimately linked with the royal court and motivated by the Ptolemaic emulation of the Persian practice of bestowing costly garments on favored friends and retainers. Hellenistic dye works have been excavated also at Mycenae and on Delos (Bowkett 1995; Bruneau 1969).

To project this Hellenistic data back into the Classical period, we need to ask: What did a Classical *ergasterion* look like? The House of Mikion and Menon in Athens serves as a good example. In its architectural form and plan it differs not at all from many other houses. It has a roughly central court on its southern side and possibly had a second to the north (Tsakirgis 2005; Shear 1969: 383–94). The usual vessels for food storage, preparation, and service were found on the floors of the house as well as in its cisterns. Here too was found the detritus of workshop activity – in the case of this house, marble dust, chips, unfinished sculpture, and tools. The space is not as large as that of Building Z, but is comparable to that of the *kapeleia* in which the loom weights were deposited in the U 13:1 well.

Textiles produced in the home were probably first and foremost intended as garments for the members of the family. Woolen *peploi* and tunics, linen *chitones*, and cloaks of various types made up the somewhat limited wardrobe of the Classical Greeks. Many slaves would likely wear hand-me-downs, although workmen, many probably slaves, wore the *exomis* and foreign slaves

wore sleeved garments that, if not imported with the slaves themselves, might have been created in the home; the slave of Hegeso wears just such a garment on her mistress' famous stele. One should, however, note the complaints of the Old Oligarch ([Xen.] *Ath. Pol.* 1.10), who claims that he cannot tell the slaves from the citizens by their clothes because the citizens were no better dressed than the slaves. The writer might not have been speaking of all slaves, but rather those, perhaps the most industrious, who were favored by their masters with new or better quality used garments (Xen. *Oec.* 13.10).

In addition to clothing, many household furnishings were crafted of textiles. Vase paintings of the *symposion* depict embellished mattress covers, pillows, and throws, but the Attic Stelai are probably more reliable testimony on domestic textiles (Pritchett 1956: 203–8). The houses belonging to the Hermokopidai, certainly the dwellings of wealthy men, were well stocked with both clothes and textiles, as attested by the numerous textiles appearing in just one house documented on Stele I (IG i³ 421) – nine *amphitapes* (pile rugs or blankets; lines 164–72), one varicolored *tapis* (rug: line 175), two *parapetasmata* (curtains or hangings: lines 173, 174, 232), many *himatia* (cloaks: lines 189–201, 209–10), two *knephalla* (cushions or mattresses: lines 217, 218), and five *epibletia* (bedspreads: lines 219–23). No textile furnishing has left any trace in the archaeological record, although curtains might be attested by the metal rings commonly found in Classical houses (Andrianou 2009: 99). Curtains probably served for closing off the inner rooms of houses, where no stone threshold blocks give evidence for expensive wooden doors.

There was a market in equipment and raw materials for the production of textiles, whether at home or in the factory setting, as well as for the textiles themselves. A workshop in the Potter's Quarter at Corinth was found to have been producing loom weights, and the stamped impressions on these and other weights have been suggested as maker's marks (Stillwell 1952: 269; Davidson 1952: 153); there is evidence of loom weight production at several sites on Crete in the Hellenistic period, including Trypetos, where the weights may have been manufactured in order to increase household income (Sofianou 2011; Tzachiki 2008). While some wool may have been produced by a family's own flock as suggested at Vari, Pylos, and Tel Anafa, the purchasing of wool in the market is frequently mentioned in the sources. Gorgo in Theocritus' *Adoniazusai* (15.18–20) complains about the poor quality of the wool bought for her by her husband. The young wife in Xenophon (*Oec.* 7.36) is also brought wool, but whether it was purchased or shorn from the family flock is not specified. Wool in the markets derived from several sources, Milesian wool being often attested (Ar. *Lys.* 729; Eubulus fr. 89 K–A; Amphis fr. 27), although wool came also from Phrygia (Ar. *Av.* 493) and the Bosphorus ([Dem.] 35.34). In the *Frogs* (1347), Aristophanes' Aeschylus parodies Euripides (*Or.* 1431–1433) as he sings of a woman spinning flax and selling linen. Aristophanes (*Eq.* 129) and

some inscriptions (e.g., *IG ii²* 1570 lines 24–6) also attest that linen was bought at market.

Let us recall that several sites – Athens, Olynthus, Halos, and Halieis – offer evidence that textiles were produced in the home but also were manufactured on a larger scale in *ergasteria*. The fact that sixty-seven houses at Olynthus lacked tools for textile manufacture might indicate that the residents were able to flee with their weights and whorls or, as Cahill (2002: 179) has argued, that the Olynthians resident in these houses were wealthy enough to purchase clothes and textiles made by others and so did not need whorls and weights for private manufacture. That clothing and domestic furnishings were purchased outside of the home is attested by numerous sources. Someone bought the confiscated items first auctioned by the *poletai* and then recorded in the lists on the Attic Stelai. Of course, this kind of sale was not an everyday event, so clothing was purchased in other places. The majority of our sources for the sale of clothing and other textiles are the comic playwrights, although Xenophon (*Mem.* 2.7.6) speaks of Demeas the cape-maker in the deme of Kollytos and Menon the cloak-maker. A character in Aristophanes' *Wealth* (507–34) complains that if all were rich, no one would work, and nothing would be for sale, including coverlets. Pollux (7.191; 10.39) notes male weavers of cushions, and *IG* (ii² 2403) lists male weavers of baskets and bags, both presumably employed in textile factories. Hermippus (fr. 63 K–A) mentions Carthaginian carpets and richly colored pillows for sale in the market.

Having blanketed the reader with data, let me attempt here to tease out some of the separate threads of this vast skein of information. That weaving took place in Greek houses is no surprise; we knew that already. What we are increasingly learning, however, as weights and whorls are better and more consistently published, is that there is some disparity from house to house in the quantity of weights found. Doubtless some of these differences are due to the caprices of preservation – the varying conditions that led to the preservation of some remains and the destruction of others. But, as the sample size gets larger, we are able to make some intriguing comparisons and contrasts.

Weaving for the immediate family needs existed in many Greek houses; surplus cloth or thread would likely have been purchased by more wealthy Greeks, especially those who owned numerous slaves involved in manufacture or labor outside of the textile industry. Depending on the number of people involved in spinning and weaving, extra cloth and garments could be woven from time to time and tucked away for barter or sale in lean years. The situation was analogous to that argued for food and other subsistence commodities hoarded as provisions for survival in times of need (Gallant 1991). In her study of Xenophon's *Oeconomicus*, Pomeroy (1989: 36) notes that the textiles of many a modern dowry are part of the household wealth, held in case the

family needs funds in the future. Textiles are not food, and while they cannot sustain life as wheat, olives, or wine can, when well maintained, clothes and other woven goods can last a lifetime and more. An abundance of well-crafted cloth and clothing could serve the family in one generation or even the next, for example in the case of Demosthenes (27.10), who counted his mother's clothing as part of his inheritance. Pomeroy (1989: 33) argues that for a family to be wealthy, what is produced must be sold. Cloth as product thus translates to household wealth (Pomeroy 1995). It should be noted that women actively produced that wealth (Pomeroy 1994: 61–5) and so are engaged in at least the production of items capable of producing revenue.

What we understand better than we did in the past is that the existence of ancient commercial weaving and sale of cloth and clothes is supported by the archaeological evidence. Some of that production, judging from the material at Olynthus, took place in buildings that architecturally and artifactually appear to be houses, although some of those textiles were, judging from Building Z in Athens, produced in *ergasteria*. The literary sources support the idea of commercial production and sale of cloth, clothing, and household furnishings, and scholars such as Ault, Cahill, and Haagsma, based on the finds at individual sites, have expressed the opinion that in all likelihood the Greeks did produce cloth and clothing beyond what was necessary for household needs. These assertions, however, are not proof.

A question that I have not asked of the material, because that question is unanswerable, is who made the cloth and clothes detailed herein. The immediate answer might be women. The image, and here I mean literally the image of women spinning thread and weaving cloth is ubiquitous in Greece, and to praise a woman for textile work, as the Romans inscribed *lanam fecit* on the tombstone for a female, was to imply that the woman had kept to her proper place and attended to housewifely duties (e.g., Hdt. 5.12.3; 4.34.1; 4.162.5). Some most tantalizing, but admittedly inconclusive evidence that I would like to present here comes from the papyri in the Zenon's archive, evidence of a practice that might possibly be extrapolated back to the Classical period. Several records note the sale to the estate of a single or a few garments manufactured by one woman. Thus Maiandria wove two chlamys in order to pay off a debt (P. Cair. Zenon II 59263; III 59355). Theodora made a chiton (P. Cair. Zen. III 59433.7–10) and the wife of Menippus made a chlamys and two chitons (P. Cair. Zen. II 59146; Loftus 2000: 178). Their actions parallel that of Andria the metic who made wool to support herself in Classical Athens. A question to be asked of the sales by women is whether they were, as was certainly the case with Maiandria, motivated by economic necessity to produce cloth beyond what her *oikos* needed, or whether this was regular practice.

Female agency in weaving should not be discounted. Foxhall and Stears (2000) have argued that women owned the textiles they made. Their assertion follows Foxhall's previous study (1989) of a woman's ability to hold property, an article in which the author proposed that even if a woman could not freely and often distribute, trade, or sell that property, she still was the rightful owner of it. Textiles made before the wedding were taken into marriage as dowry, and like any other dowry, remained the property of the woman and could be retrieved upon divorce. The law code of Gortyn (*IC* iv. 72, col. 2 lines 48–52, col. 3 lines 17–24) declares that a woman divorcing in that city owned one-half of the cloth she wove in the course of her marriage. Textiles were, simply put, a form of capital. They were dedicated in sanctuaries, and so too were the tools used to produce cloth. I have already cited the silver beater dedicated to Athena in Athens, and loom weights were dedicated to Athena at Lindos (Blinkenberg 1931), Troy, Delphi, Elataea, Stymphalus, Halos, and on the Athenian Acropolis (Wallrodt 2002). I strongly suspect that the reluctance to see cloth and clothing as part of the market economy in Athens is the result of the reluctance to see women as having an active role in that economy.¹¹ Brock (1994) previously chipped away at the notion of women's work as degrading and thus relegated to slaves or only women of the lower classes. He argued that the literary sources appear to suggest as much because seclusion of women was regarded as a status symbol, and no self-respecting Athenian would want to advertise the fact that his female relatives produced clothing or domestic textiles for sale. What I have presented here may be added to Brock's argument as material evidence that he did not mine for support of his idea.

While they approach the matter from somewhat different perspectives, both Brock and Foxhall are in general agreement that the household is 'the primary unit of production and consumption' (Saller 2007: 87), a statement with which I essentially agree for the Classical period. In poorer households, the members of the *oikos* spun and wove for private consumption and, if possible, produced cloth and clothing for sale to augment the family income. In wealthier households, some cloth and clothing production may have occurred while further garments, those in excess of the household's capacity to produce or those rendered in finer weave, in luxury materials, or with specialized embellishment were purchased from outside sources. Evidence for the *ergasteria* in which textiles of non-domestic manufacture were produced have been recognized in the Classical period at Athens and Olynthus, and increasingly in the Hellenistic period such as in the dyeing establishments at Mycenae and Delos; however, the evidence of loom weight distribution argues for predominantly domestic production in the Classical period. Saller argues for a somewhat slow and limited development in women's and children's labor from the time of Classical Athens to the advent of imperial Rome, and the dyeing establishments cited herein,

located largely outside the home, suggest that advances in textile technology saw the industrialization of textile dyeing as separate from the domestic environment.

As many scholars of pottery have argued, pots are not people, and I would add that by extension loom weights are not people. Pottery, loom weights, and cloth are created by human action and used in further human activity, but from them we cannot determine how many people or even who carded, spun, and wove in a Greek house. Those households with the largest numbers of free Athenians like the overcrowded home of Aristarchus in Xenophon's *Memorabilia* (2.7.2), could well produce cloth and clothing much beyond their immediate needs. So, too, could homes with many slaves, the residents deemed 'invisible' in the material record (Morris 1998). Men could spin and weave as well as women could, as Thompson (1982) has argued, and because women did not engage in large-scale commerce (Saller 2007: 94), men were probably at least the public face of even the few Classical commercial weaving establishments. The conclusion to be drawn is that any discussion of textile work and sale in Classical and Hellenistic Greece needs to be better informed by feminist theory, better supported by material as well as literary evidence, and freed from the assumption that only women spun and wove.

NOTES

- 1 Koropi: Beckwith 1954; Miller 1997: 80–1. Eleusis: Mylonas 1953. Kerameikos: Hundt 1969: 65–71. Kalyvia: Moulherat and Spantidaki 2007. Pherae: Adrymi-Sismani 1983. Kerch: Stephani 1878–9; Gerziger 1975; Barber 1991: 206–9.
- 2 The hand-held loom, resembling a lyre in its shape, was used for the sprang technique, a method of hand-weaving threads in order to create a net-like fabric. The results were akin to modern crochet.
- 3 E.g., a red-figure skyphos from Chiusi depicting Penelope at her loom (Chiusi 1831; Furtwangler and Reichhold, *Griechische Vasenmalerei* pl. 142), a black-figure Kabeiric vase with a comic version of the same subject (Oxford, Ashmolean G 249 [V262]), and shards of a black-figure plaque from the Athenian Akropolis). Graef and Langlotz 1925: pl. 104.2531 A–C.
- 4 E.g., at Olynthus. Robinson 1941: 472–4.
- 5 E.g., W 50, an unpublished wooden spindle whorl found in a well (Deposit K 1:2) to the north of the Athenian Agora.
- 6 Painted depictions of figured cloth include the gowns of several goddesses, especially Hebe, on the dinos by Sophilos in the British Museum (BM GR 1971.11–1.1). The *peplos* of Phrasikleia is ornamented with incised and painted designs including rosettes. Barber 1992 favors seeing both of these designs as woven into rather than embroidered on the cloth. The Gigantomachy on Athena's peplos was woven in, probably much as Arachne wove representations of the misdeeds of the gods into the cloth she created in her contest with Athena (Ov. *Met.* 4.103–28).
- 7 Wrenhaven 2009 speculates that the *talasiourgoi* mentioned in the dedications were prostitutes.

- 8 E.g., deposits in areas later occupied by houses. Deposit B 18:6 (well) – 5 pyramidal weights. Deposit D 15:1 (well) – 3 bronze weights in lower fill. Deposit D 17:2 (pit containing household refuse) – 2 pyramidal weights. Deposit E 15:6 (well) – no weights recorded. Deposit H 12:15 (well) – no weights recorded. Deposit Q 21:3 (well) – no weights recorded.
- 9 Athenian Agora Deposit K 17:2. Loom weights catalogued as MC 1024–32.
- 10 I thank Mark Lawall for telling me about this collection; he has previously studied the graffiti on wine amphorae discovered in this and other nearby deposits.
- 11 Pomeroy 1989: 35 was of similar mind when she argued that Finley ignored the females in his assessment of the ancient economy.

AGRICULTURAL PRODUCTION AND DOMESTIC ACTIVITIES IN RURAL HELLENISTIC GREECE

Evi Margaritis

INTRODUCTION

The countryside (*chora*) played a fundamental role in the production of food and has been rightly characterised as *essential* for the economy of Ancient Greece (Alcock 2007). Until recently, however, it has been somewhat unexplored, due in no small part to a lack of attention in major programmes of excavation and scientifically based archaeological methodologies. As a result, agricultural practices and the economy have been mainly approached through the written sources, specific kinds of archaeological material, such as installations, and the ethnographic record. This dataset has been strengthened through regional survey, aerial photography and satellite imagery (Alcock 2007), the latter helping particularly in the identification of ancient field systems. Intensive surveys have made great progresses in methodology, have now sampled many areas of Greece and have reached the point where rural landscapes are starting to tell their own story concerning organisation, occupation patterns, farming strategies and population change (e.g., Bintliff and Snodgrass 1985; Wright *et al.* 1990; Cherry *et al.* 1991; Mee and Forbes 1997; Cavanagh *et al.* 2002; Alcock 2007; Lolos 2011). Apart from the general information and trends of the field surveys, however, research on regional agricultural, economic and social development has yet to be approached through the targeted interrogation of groups of sites.

Discussion has focused on the nature of ancient agriculture, in an attempt to evaluate the relationship between animal husbandry, the intensity of cultivation, agricultural management, occupation patterns and land use (Foxhall 2007; Osborne 1992; Lohmann 1992; Forbes 1995; Halstead 2002; Alcock 2007; Cloke 2012). Two models summarise more or less current research on ancient agriculture and take into consideration all previous research. The first 'traditional' model of settlement and land use pattern relies on the evidence deriving from the ethnographic record. According to this data, the standard practice in arable agriculture was the alternation of cereal crops with fallow, ploughed bare in the spring. This practice reduced the availability of lowland summer grazing, thereby enforcing the seasonal transhumance of sheep and goats. A fundamental division between stock husbandry and arable farming was thus taken for granted (Semple 1932; Koster and Koster 1976). In this extensive system of agriculture, only limited manuring of the land would be possible, and agricultural yields are presumed to have been low due to a lack of fertilisation (Gamble 1982; Amouretti 1986:2).

Halstead (1981; 2002) introduced a second 'alternative' model, where the predominant pattern would be small-scale, stable gardening systems with crop rotation and regular manuring. In the agriculture of prehistoric Greece, pulses seem to be as important as cereals, and arguably such a departure from the traditional picture for later periods would only be practicable under a small-scale regime. The rotation of cereals and legumes in arable cultivation resulted in the increased availability of summer fodder in the lowlands, thus evening out seasonal imbalances and diminishing the need for transhumance. In return, livestock consumed weeds and provided manure, thereby maintaining soil fertility and crop productivity (Halstead 2002). These models differ essentially in that one is based on mixed farming whereas the other assumes a coexistence of arable farming and specialised pastoralism without direct interaction (Hodkinson 1988).

The written sources do not support a model where agricultural estates would have been operations focusing only on a single crop and/or product, and both Greek and Roman writers suggest a mix of agricultural processes (Forbes 1995). Foxhall (1990) and Osborne (1992) also suggest a mixed farming regime against a single crop. Furthermore, until recently discussions on the ancient economy tended to downplay trade and market forces, emphasizing above all the need to satisfy local subsistence requirements; current research, however, focuses on the role of markets in antiquity in the development of the economic and social environment of a site or of an entire region (Scheidel and von Reden 2002).

Until recently very few rural buildings have been excavated in Greece. Our understanding of the character of farmhouses situated in the Greek *chora* has largely been based on the excavations of the Vari and the Dema houses in



8.1 Map: The Lowlands of Mount Olympus (E. Margaritis).

Attica (Jones *et al.* 1962; 1973). There is an obvious need for more data to clarify the issues highlighted herein. This chapter seeks to investigate ‘the missing link’ – the agricultural practices and economy of specific country houses of the Hellenistic period located within a defined region – and to answer defined research questions through extensive excavation programmes where recovery techniques for organic remains have been employed.

Such an opportunity presented itself during the construction of the new railway line connecting southern and northern Greece, which was planned to pass through the lowlands in southern Pieria, the core of the Macedonian countryside. Due to this project many new sites came to light, dating from the Neolithic to the Byzantine period (Poulaki 2007). They are all located in the lowlands of Mount Olympus, in a very fertile strip of land close to the sea, which connects Thessaly with Macedonia (Figure 8.1).

Four of them, dated to the Hellenistic period, were excavated: Krania (Poulaki 2003; Margaritis 2014), which represents the harbour area of the ancient city of *Heraklio*, and the country houses of Platania (Gerofoka forthcoming), Kompoloi (Poulaki, Mourati and Margaritis forthcoming) and Duvari (Poulaki 2003). Their excavation presented a unique opportunity to study the relationship between the *polis* and the *chora*, and to explore the rural

landscape, agricultural systems and settlement patterns of the confined geography of southern Pieria by employing up-to-date archaeological techniques. A systematic sampling strategy has facilitated the creation of the most varied and well-defined archaeobotanical data set in Greece relating to the Classical period, due to its focus on a specific, delimited geographical area in which both rural and urban centres were located (Margaritis [forthcoming](#): 39). This paper concentrates on the country houses of Kompoloi and Platania. For the first time, ancient agriculture of the Classical period is approached through a novel set of data: the plant remains, providing site-specific information on the economic development of these sites located in a rural area of Greece.

CLASSICAL ESTATES: OCCUPATION, UTILISATION AND PRODUCTION

The Site of Kompoloi

The Archaeology

The site of Kompoloi is situated close to the coast of the Thermaic Gulf, on fertile alluvial soils. To convey some idea of its proximity to the other known sites of the region, the hill of Platamon and the ancient city of Heraklio (the site of Krania) at its foothills is located about 2.5 km to the south/southeast, while the acropolis of the city *Livithra* lies 3.5 km to the northwest. Nine hundred metres north of Kompoloi, the small rural site of Duvvari I was excavated, and 100 metres further north another small rural site, Duvvari II (Poulaki-Pantermali [2001](#) [2003]), was located but not excavated as it was heavily damaged by modern construction work ([Figure 8.1](#)).

The excavation at Kompoloi revealed a country house of approximately 1350 m² consisting of living quarters and a storage area, organised in an integrated complex dating from the second half of the fourth century to the early third century BCE ([Figure 8.2](#)).

The living quarters were arranged around a courtyard with *stoas*, typical for the architecture of the period (Nevett [1999](#)). There is evidence that the two buildings continued to the east and west, suggesting a much larger area for the site, but these areas were only identified and not excavated. In particular, the extension to the east is thought to be of a similar size to the excavated living quarters, also arranged around a courtyard (Poulaki, Mourati and Margaritis [forthcoming](#)). A basement was also excavated on the eastern wing of the living quarters, indicating the presence of a tower, a common feature in other farmhouses around Greece (for a review of farmhouses with towers and suggested interpretation see Morris and Papadopoulos [2005](#)).

The living quarters and their *stoas* were full of amphorae, household vessels in a variety of shapes, including large quantities of fine pottery, agricultural



8.2 Country House at Kompoloi (courtesy E. Poulakis).

tools, loom weights, mortars, arrowheads, jewellery and coins. Also of note are the large number of basins with unusual incisions (some of them have spouts), mainly found in the *stoa* north of the building. The storage area measured 19.5 by 19.5 m and the room was devoid of other items, containing only *pithoi* and collapsed building remains. Twenty-two *pithoi* of various sizes were found, of which many were very large with an estimated volume of 2,200–2,300 litres. Several had letters incised on the rims (most of them bore the letters ‘KO’), possibly indicating the nature of the stored product. A total of thirty-two *pithoi* were found at the site (Poulaki, Mourati and Margaritis [forthcoming](#)).

Several structures and activity areas have been found outside the complex: hearths, roofed *stoa* in the north of the building, a carefully constructed well, many *pithoi* located in roofed areas, and a series of parallel ditches immediately south of the living quarters. An enclosure was also excavated, west of the storage area.

The Archaeobotanical Remains

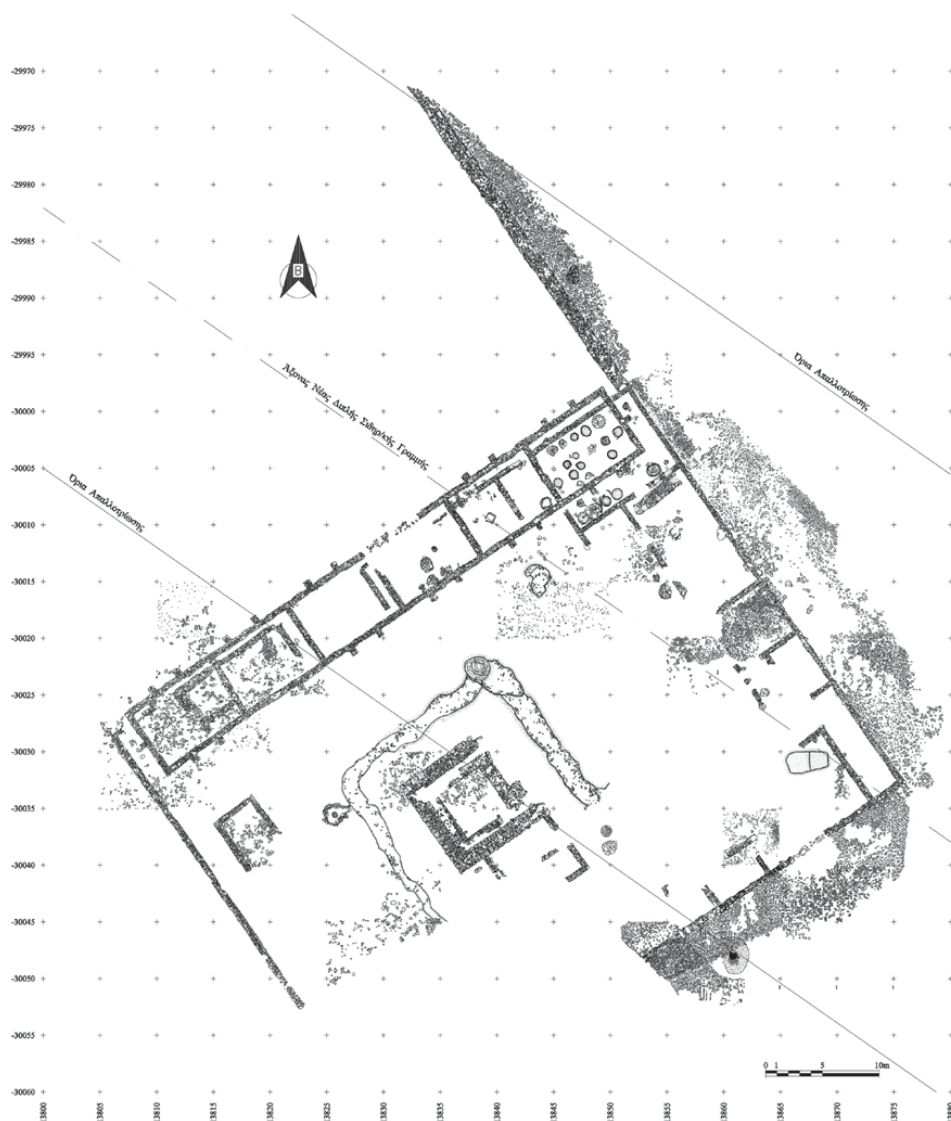
The extensive sampling for organic remains at Kompoloi included every archaeological context and the archaeobotanical material recovered consisted of limited quantities of cereals, pulses, olives and figs, originating mainly from the rooms in the living quarters and from the few hearths found at the *stoas* surrounding the courtyard (Poulaki, Mourati and Margaritis [forthcoming](#)). The vast majority of the archaeobotanical material, however, belonged to grape remains, present in almost every context of the site. The most interesting find was the thousands of grape pips accumulated at the bottom of the huge *pithoi* located at the storage area. In order to interpret these large quantities of grape remains, ethnographic and experimental work was initiated, based on grape processing (Margaritis and Jones [2006](#)). This work suggested that it is possible for grape pips to escape the sieving process during treading or afterwards and end up in the fermentation vessel, where they can remain if the actual product, the wine, is not subsequently transferred to a different vessel, with a possible further and more elaborate sieving. This can easily be the case, particularly with very large containers, such as the storage vessels found at Kompoloi.

Beyond the storage area, large quantities of grape remains were found in the living quarters, in several places in the courtyard and in the ditches, indicating wine dregs used as fuel and disposed in the courtyard in the first case, and wine dregs used firstly as fuel and then as manure in the ditches in the second (Margaritis and Jones [2006](#)). Wine was also stored in a considerably smaller quantity in the basement of the living quarters, indicating perhaps a different use or quality, perhaps the owner's personal supply. In the basement, indications of the presence of stored raisins were also found (Margaritis and Jones [2006](#)). Although the engagement in viticulture is evident from the plant remains, no related archaeological finds such as wine making installations, for example, were found at Kompoloi, leaving the identification of this major part of the economy of the site solely to the evidence of archaeobotanical remains. A stone wine press was retrieved at some distance from the site, although it is not possible to confirm with certainty its relation to the complex (Poulaki [2004](#)). This lack of installations may suggest that the initial processing of the grapes could have taken place in the fields, with the must subsequently transferred to the site. A similar practice has been recorded in rural Greece until recently (Psaraki-Belesiotti and Geroulanou [1978](#)).

The Site of Platania

The Archaeology

The site of Platania is, like Kompoloi, situated on alluvial soil next to the ancient road connecting Thessaly with Macedonia. The site is located 4.5 km southeast of the city of Heraklio and very close to the possible location of the ancient city



8.3 Country House at Platania (courtesy E. Poulakis).

of Phila. Kompoloi is approximately 7 km northwest of Platania. Two habitation phases were identified at the site, and the excavation revealed one of the largest rural buildings excavated in Greece, which was contemporary with Kompoloi in its initial phase. The building was destroyed by fire in a period possibly connected with the invasion of the Gauls. Only a part of the building was immediately rebuilt, dated at 280–275 BCE at this second phase, representing, however, a much smaller establishment (Poulaki 2003). This paper focuses on the first habitation phase, when the building consisted of rooms surrounding an open courtyard with *stoas*, an arrangement similar to that of Kompoloi. The courtyard housed a well, a pottery kiln and a tower (Figure 8.3).

A storeroom was found in the northeast corner of the building, containing at least twenty-six *pithoi*, some of them broken and repaired in antiquity. Unlike Kompoloi, where the tower is integrated within the building, at Platania the tower represents an autonomous building, which was rebuilt in the second habitation phase. Similar to Kompoloi, there are also external areas of activity: a roofed *stoa* outside the east wing of the building, a threshing floor to the south and an enclosure to the north, found in other excavated farmhouses (Jones *et al.* 1973; Lohmann 1992). It was excavated to a length of 32 meters but was not followed to its end, and it was most likely much larger (Poulaki 2003; see Gerofoka forthcoming for detailed account of the material culture of the site). This enclosure could have marked the boundary of the site and may have been used to keep animals, as the small structures located (but not excavated) within the area could have been used as pens; it could also have been an area of garden cultivation divided into small plots, close to the site; or it could have been part of a field boundary system. All these external structures belong to the 'land' of Platania, used for cultivation or for other structures (Foxhall 2002). Coarse and fine pottery made up the majority of the finds in addition to tiles, amphorae, *pithoi*, loom and lead weights, iron implements, small mortars, bronze fittings, iron spearheads and arrowheads (Poulaki 2003). The presence of the kiln suggests that the occupants were making at least some of their pottery themselves. The tower could have been used for keeping the animals or for storing crops, but there were most likely other areas within the excavated building and the external areas which would also have served these purposes (see Discussion at the end of this chapter). It might have had a defensive character due to the location of the site near a corridor connecting Thessaly and Macedonia, where people could observe and react to the movements of groups travelling through (or perhaps on occasion ravaging) the landscape.

The building at Platania was 2,400 m² (0.24 ha), but if the external areas are included, the size is much greater, approaching 0.5 ha. At Kompoloi the total excavated area, including the extension to the east, adds up to a little more than 0.2 ha, without, however, taking into account the external areas. If those are considered, Platania and Kompoloi may well have been of a similar size. Both sites are certainly greater in comparison to the excavated farmhouses of southern Greece: Dema, described as a 'superior residence' (Jones *et al.* 1962), measures approximately 350 m² (0.035 ha) while Vari is even smaller (0.024 ha). It is interesting to note that the storage area of Kompoloi alone is of slightly larger size than the whole Dema site. Whitelaw (1994) has suggested 0.25 ha for a family farmhouse. Sites between 0.007 and 0.5 ha were thought to be farmsteads in Boeotia (Bintliff and Snodgrass 1985), while at Methana farmsteads of the Classical and Hellenistic period were generally smaller than 0.2 ha (Foxhall 1997). For the area of southern Argolid, it was proposed that a farmhouse of 0.33–0.46 hectares points to a wealthy household with agricultural production

for surplus and capital rather than to a regime of subsistence farming, characterized by an area of around 0.25 hectares or less (Acheson 1997). According to these last data, the present sites correspond to wealthy households rather than typical farmsteads (see Discussion), and correspond, in size at least, with wealthy city houses such as House IV at Eretria, and the Houses of Dionysus and Rape of Helen at Pella mentioned by Morris (2005: 108). Kompoloi and Platania may represent estates (αγρεπαύλεις) a term normally used for the description of large rural establishments with large storage areas engaged in large scale farming for Roman Greece. Both sites are built in the rich land of Macedonia, close to big cities, circumstances that possibly favoured the creation of such estates, as seen at other sites such as Liotopi–Routseli further north in Macedonia, with an estimated size of more than 0.4 ha (Adam–Veleni 2003).

The Archaeobotanical Remains

Archaeobotanical samples were taken from the rooms of the north and east wings of the house (the south and west wings were badly damaged by modern construction work and therefore not sampled), their adjacent *stoas*, the tower, the kiln, the area of the threshing floor, pits in the courtyard and from the *stoa* east of the building. A synopsis of the plant remains found at Platania demonstrates that a variety of species is present (see Margaritis forthcoming for a detailed analysis of the data): hulled and naked barley; free threshing macaroni and bread wheat; glume wheats such as spelt, emmer and einkorn; oat; rye; lentil; bitter vetch; lupines; grape; olive; fig; almond; hazelnut; walnut; cornelian cherry; blackberry and danewort. In addition, a variety of wild/weed species are present in the assemblage in small numbers including, among others, darnel, small vetches, sheep's sorrel, plantain, medic, clover, field gromwell and christ's thorn.

It is clear that the plant remains at Platania contrast with the ones present at Kompoloi, suggesting quite different agricultural practices, organisation and management at the two sites. The predominant cereals are barley, macaroni and bread wheat. The common occurrence of barley with the wheat is not surprising as they go through the same processing stages (Hillman 1984) and could have been grown together as a 'maslin' (mixed crop) and subsequently discarded in the same areas. Macaroni and bread wheat could have also been grown as a separate 'maslin' (Halstead and Jones 1989). The dominance of free-threshing wheat at the site, which is more vulnerable and demanding than other wheat species, can be explained by the distinct possibility at this site of a more intensive regime (in terms of labour and weeding) necessary 'to obtain the high yield potential' (Jones 1978). All glume wheats are present in insignificant amounts, suggesting that they occur only as contaminants among other crops. A similar pattern emerges for oats and ryes. Pulses are represented by lentils and bitter vetch. Lentils would have formed an additional

enrichment of the dietary routine as it contains high levels of proteins and vitamins, and is considered an important substitute for meat in many areas of the world (Langer and Hill 1991). Its straw is also useful as animal fodder, superior to other pulses (Murray 2000). The role of bitter vetch is more ambiguous as its regular consumption by humans can result in specific medical disorders (Flint-Hamilton 1999). Because of this, bitter vetch has been used widely as fodder (Halstead and Jones 1989). However, it is possible to process it to neutralise its toxic properties (Flint-Hamilton 1999) and its use in the human diet has not been excluded for Neolithic and Bronze Age Greece (Valamoti 2004), while the value of legumes when grown in rotation with cereals has been well presented elsewhere (Sarpaki 1992). It is possible that the same prevailed at Platania and a rotation scheme would be feasible for the farming regimes at this site.

Coming to the wild/weed category of the assemblage, Jones (1984) has shown that it is possible to recreate the crop processing sequence according to their physical characteristics and determine what kind of domestic activities were followed in the site. Following the categories provided by Jones (1987), the species found at Platania are indicative of the later stages of processing activities undertaken at the site (Margaritis *forthcoming*: 63–4). The majority of them represent weeds on arable land (Hanf 1983) entering the site with the harvest of various crops. In addition, it is possible that that species such as medic and lupines were gathered for animal fodder. Lupine can be used as green manure, forage plants or for fodder, mainly for cattle (Gladstones 1974). Because of the limited number of lupines found in the assemblage and their fragmentary state, it was not possible to determine if they were weeds associated with the cultivation of crops or they actually represented a cultivated legume. Today in some parts of Greece, mainly in the Mani in the Peloponnese, they are grown as a crop and eaten after dangerous water-soluble and bitter alkaloids have been removed by boiling or roasting (Zohary and Hopf 2000). If cultivated, they could have been intended either for human consumption or for fodder. Only Christ's thorn seeds did not enter the site as a by-product of crop processing. Being a hedge plant, it may have been used for fuel or for other purposes, such as the building of enclosures (Foxhall 1998a), or its seeds may have been dried for human or animal consumption.

Grape is present in the majority of the samples in varying quantities, probably indicating both consumption and wine making. Grape pips were present in pure concentrations, occasionally numbering thousands, found at the east side of the building (Margaritis *forthcoming*: 55–8). As was suggested for the remains at Kompoloi, this assemblage can be interpreted as the by-products of wine making, either utilised as fuel or representing residues kept as fertiliser or fodder that was accidentally burned.

The remaining fruits and nuts represent seasonal gathering to complement the diet of the inhabitants of the site, obtained by exploiting a variety of micro-environments extending from the lowlands to the foothills of Olympus and beyond. Some trees, such as almonds and figs, could have been cultivated in orchards. Nuts would have been stored for long periods and their shells utilised for fuel, optimising in this way the use of their by-products.

Most of the plant remains typically come from contexts such as floors and hearths, destruction layers and pits. They mainly represent secondary or even tertiary depositions – waste products from various household activities, such as processing, cooking or consumption, which ended up in the fires of the estate and were thus preserved. The assemblage from the tower is broadly similar to the rest of the material and therefore cannot be of much use for the identification of the specific role of the tower at Platania.

Last, but most important, olive is the dominant crop at the site as it is found in almost every sample (for a review of the evidence for olive cultivation in ancient Greece, see Foxhall 2007). According to Margaritis and Jones (2008a; 2008b) the olive remains, especially those found in great quantities disposed in pits in the courtyard, represent the residues of olive oil production. The samples reflect the by-products of very ‘gentle’ milling, involving a method that leaves a good fraction of the stones uncrushed. Residues of olive oil and by-products of fruit consumption are more likely to be used as fuel on a regular basis, which may explain the abundance of olive remains. The use of olive as fuel is mirrored in the samples deriving from the kiln. Olive stones are very good for both cooking and firing as they burn slowly while producing a small amount of smoke but plenty of charcoal. They are also useful as a domestic fuel (Brun 2003:183), evident from the olive remains used as fuel at the various rooms of the house at Platania.

Olive products can fulfil a wide range of needs. Olive fruits may be eaten raw, although usually they are processed to remove their bitter taste. Both green (gathered immature) and black olives when treated in brine are transformed into a nutritious food, easy to prepare and easy to carry, suitable for a storage period of up to five years. Olive oil production residues were used as fodder, fuel and fertiliser. The liquid residue, *amurca*, was used in various ways: as fertiliser, insecticide, wool-preserved, water-proofer, skin-curer, lubricant and tonic for animals (Amouretti 1986: 189–92). Considering all these uses, olive products would have been used in a variety of ways all year round by the occupants of Platania, making olive cultivation a very important element in the economy of the site.

As in the case of wine-making at Kompoloi, no installations connected with the production of olive oil were found at the site. The lack of such installations could again be explained by their location in the fields; the whole range

of processing could have been taken place there, as suggested for prehistoric Greece (Margaritis 2013); or installations could have been shared with other households, with Platania offering other services, help or products in return, as was often the case in Greece until recently (Margaritis personal observation). The lack of such equipment would suggest non-specialisation in olive oil production at Platania. It is also possible that the production of olive oil at a household level with a small scale surplus would have been carried out by other means than expensive stone installations (see Margaritis *forthcoming*: 83–6 for different methods of olive oil production), but it seems more likely that production was sited elsewhere. The occupants of Platania could have been involved in the production of surplus, in commercial activities and in the exchange of products with other farmhouses in the region. The possibility that some of the oil surplus was given to a neighbour who hired out labour and/or equipment should certainly not be excluded.

DISCUSSION

It has been suggested that archaeologists gather merely the detritus of ancient life, which hardly represents the full range of processes of production, exchange and consumption (Morris 2005: 93). For example, studies of ancient wine deal predominantly with its containers (amphoras), but less with production itself.

In this study, the archaeobotanical remains from Kompoloi and Platania add considerably to our understanding of such processes in a region of Greece that offers an array of soil and climatic microenvironments, which would have encouraged agricultural experimentation and promoted the cultivation of a wide range of crops. In addition, this kind of data offers insights on land holdings, access to resources and labour requirements. It should be also mentioned that the wealth and quantity of the material culture retrieved from both sites is great, unlike certain other excavated Classical and Hellenistic houses (see Morris 2005: 113–19 for a thorough discussion on formation and abandonment processes).

At Kompoloi, the large quantities of grape remains found in combination with significant storage facilities show engagement in large-scale viticulture, most likely for trade. Unlike Platania, Kompoloi focused on ‘a particular resource’ (Halstead 1992), and different types of evidence suggest that the site was the centre of a specialised wine production industry. Halstead (1992) has pointed out that it may be difficult to recognise local specialisation, as the archaeobotanical or the archaeozoological data usually reveal more about the place of consumption and not much about the place of production. Kompoloi, on the other hand, does appear to be a site for the production of wine. The capacity of the storage facilities clearly showed that on-site consumption would have played an insignificant role in comparison to the amounts available for

trade. Information to be gained from the study of the amphorae and the identification of possible places of origin will certainly provide additional information on the trade connections of Kompoloi and allow this issue to be explored further. Engagement in extensive viticulture did not necessarily entail only the production of wine but probably also included production of raisins, as the evidence from the cellar of the living quarters suggested. These were produced as an additional vine product, either for consumption on the estate or in larger quantities for exchange or even trade.

Viticulture, to a greater degree than cereal and even olive farming, demanded a novel type of intensified agriculture and with it a new set of rural values that emphasised farm residency and investment in land sometimes beyond equal return in profits (Hanson 1992). In order to be engaged in large-scale viticulture, the landowner of Kompoloi must have had the capital and resources available for practising a specialised economy, and could afford a high-risk investment with uncertain profits and returns. Kompoloi is a wealthy estate, suggested not only by its size and storage facilities but also from the quantities of fine pottery and coins and the presence of gold in its premises (Poulaki 2001). In order to be engaged successfully in such an extensive and intensive farming practice Kompoloi would also have had to fulfil specific prerequisites suggested for viticulture: security, transportation infrastructure and connection to different industries present in the local economy (Hitchner 2002). These industries included amphora production for the transport of the wine to different places. Kompoloi's engagement in a market-oriented economy would have been facilitated by its geographical location, on the route connecting Thessaly with Macedonia, close to two urban centres, Heraklio (Krania) and Livithra. In the historically recorded and recent past as in the present, extensive and systematic cultivation of and specialisation in both olive and vine has been generated by demand from a market or similar mechanism (Hamilakis 1995). Ports acted as export points through which the surpluses of a wide region were funnelled (Mattingly *et al.* 2001); it seems likely that wine would have been transferred from Kompoloi to the harbour of Krania for medium or even long range export.

It has been suggested that the production of the famous Mendeian wine represented production from a large area of Chalkidiki (Papadopoulos and Paspalas 1999). Given the location of Kompoloi opposite Mende, it seems reasonable to posit that Kompoloi was one of a number of estates producing the large quantities of wine needed for the Mendeian 'brand' of wine (see Panagou, Chapter 9 in this volume for a detailed account of amphora distribution).

Completely different economic mechanisms were employed at Platanía. By growing a variety of crops, 'a little of everything' (Forbes 1976), at Platanía, the risk of uniform failure was reduced. The mixture of cereal and pulses with slightly different growth requirements and tolerances would afford some

protection against complete crop failure at the site, as would the intercropping of olives with winter cereals or legumes (suggested also at the Roman site of Pyrgoudhi: Hjohlman 2002), and the growing of ‘maslins’ of wheat/barley indicated at Platania (Wagstaff and Augustson 1982) and/or of macaroni/bread wheat (Halstead and Jones 1989). This diversified agricultural scheme observed at Platania would also allow harvests, the periods requiring the greatest labour, to be spread throughout the year, a system that would have had important implications for the economical use of labour.

The engagement with olive cultivation at Platania provides the site with a special character. It is the ‘multi-practicality’ of the olive, its oil and by-products, which contribute to the special place the olive had in the economy and society of the ancient and modern Mediterranean in general and at the estate of Platania in particular (Mattingly 1996). The biological parameters and growth cycle of the tree, the particular traditions of caring and tending, have created specific ideological aspects linked with the cultivation of this crop (Margaritis and Jones 2008c). Platania was producing for subsistence while it was also engaged in the cultivation of a cash crop, the olive, but it did not specialize in them alone due to their unpredictability of return. It has been suggested that five hectares, three of which are devoted to cereals in combination with sixty olive trees and some stock herding was sufficient to feed a family (Migeotte 2009: 86). Platania however would have most likely exploited more land than the typical small farmstead if we judge from its size, but also from the large storage facilities, and it was certainly capable of feeding more than one family and their slaves, although it is difficult to predict the actual number of people. Some of the olive oil could have been channelled to local markets, between different country houses or even with the nearby urban centres. Overall, Platania shows intensification of production, involving the possible cultivation of cereals and pulses in rotation, where the crops are closely supervised and tended with weeding and manuring, frequent tillage or continuous cultivation of the same fields (Halstead 1994). Intensive farming regimes can also be inferred if some land plots were actually located within the enclosure and hence very close to the site.

CONCLUDING REMARKS

This case study from Macedonian Pieria presents new evidence for ancient Greek agriculture. The diversity evident at Platania, along with the engagement in a cash crop, provides hard data on agricultural practices and farm management, previously mainly approached through the ethnographic record and written sources (Forbes 1995).

Kompoloi, however, presents an alternative picture of agricultural activity of a specialized sort, focusing primarily on wine production. Even if Kompoloi

was engaged in some production of other crops for subsistence, the production of wine was so great that this clearly formed its main focus. The owner of Kompoloi undertook considerable risk investing in the cultivation of large areas of vines. Kompoloi represents an important exception to the proposed norm of polyculture: specialisation in one crop has not until now been thought to be a significant or viable aspect of the agricultural economy (Osborne 1992).

In addition, referring to the discussion about land and farm properties, Hanson (1992) has suggested that they were not many large holdings; rather, small plots were the norm. On the other hand, Osborne (1992) and Foxhall (1992), following different methodologies, came to the opposite conclusion for Attica. They have argued that a considerable proportion of the land was indeed in the hands of the wealthy minority. Most of the land was divided into individual plots but wealthy owners would have groups of plots operating as a single unit, scattered in the territory of Attica and beyond (Foxhall 2002). If Kompoloi is to add to this discussion, a tentative estimate of the potential area cultivated under Kompoloi is useful: a field of 1,000 m² fertilised with charcoal and ashes produces approximately 300 litres of wine, enough for the annual supply of a family of four. One *pithos* from the large storage area held 2,200–2,300 litres of wine and a quick calculation shows that this amount equals 0.75 hectares. At least twenty-two *pithoi* of similar size were found in the *pitheon* area and elsewhere in the excavated complex. This suggests an extent of land under cultivation for vine alone at Kompoloi of around 16 ha, not including any land set aside for other crops. While the excavated storage area at the site was dedicated to wine it remains possible that other storage facilities could have been located in the unexcavated east extension of the site. Alternatively, Kompoloi's market connections could have been bilateral, buying the majority of products needed for subsistence. The holdings of the estate would cover a large area of land, most likely divided into smaller plots in order to take advantage of the various micro-environmental niches of the region: not only to take advantage of the qualities of different soil conditions but also to prevent complete crop failure in case of weather conditions or other hazards such as pests and so on. The second important economic recourse would have been labour, and it must be the case that a significant number of people would have worked the land of Kompoloi.

On the basis of survey information, Alcock (2007) has suggested the presence of a hierarchy of country houses during the Archaic-Classical periods in the Greek countryside. The area of Pieria confirms this pattern for the Hellenistic period, consisting of large estates but also much smaller farmhouses of an approximate size of 0.03 ha, such as Duvári I and II. It has been also suggested that during the fourth century the trend of focusing on a particular product destined for export may have intensified, although always within a polyculture regime (Migeotte 2009: 87). Kompoloi presents a more extreme

case where the cultivation of other crops, although possible, cannot be demonstrated from the archaeobotanical record. In addition, if other crops were cultivated, the areas of land belonging to the estate would have been significantly larger.

In addition, these data also contribute in an indirect way to the discussion of animal husbandry. The animal remains from Kompoloi are scarce, which is noteworthy considering the size of the estate; on the other hand, the animal material from Platania is very rich. The exploitation of a variety of different environmental niches could have allowed the occupants of Platania a high level of mobility, thus also exploiting uncultivated areas suitable for grazing. In addition, it is evident from the plant remains that a wide range of agricultural residues would have been available: cereal and legume by-products, wine and olive oil residues, olive prunings, vine and fig leaves, and weeds, essential for stock rearing. These plant sources would in turn convert through the animals into food and other products such as hides, hair and wool (Forbes 1995). Furthermore, the integration of crop and livestock husbandry would in turn make manure more freely available and so reinforce the viability of intensive farming, which is evidenced at Platania, in a model most likely in agreement with husbandry management suggested by Halstead (1987), indicating a symbiosis of stock keeping and agrarian farming.

As mentioned, no archaeological material that would have connected the two sites with olive oil and wine production has been recovered. It is important therefore to consider that the lack of such installations in field surveys cannot be conclusive as to lack of such cultivation and production practices, much less the level of engagement in such industries. In addition, the evidence from the excavation of these two estates at Pieria suggests that wealthy houses which focus on the production of a surplus can be smaller than 0.4 ha and those sites estimated at up to 0.5 ha in surveys should not necessarily be characterised as simple farmsteads, as it seems these were often significantly smaller. The conclusions of this paper as to the agricultural economies of these two sites are based on detailed excavation data and archaeobotanical recovery, and are important in demonstrating the limits of inference when dealing with much wider scale survey data.

This chapter has highlighted the importance of archaeobotanical data to the study of Ancient Greek agriculture. Plant remains have progressively become part of more focused studies from excavations of the Classical period. Urban centres such as the Athenian Agora and Corinth (Margaritis under study) and rural ones such as the site of Foti-Vroskopos on Kea (Karnava, Kolia and Margaritis 2011) will soon start to unfold their own economic and social histories through the analysis of their organic remains. This new information, although far from enough for a coherent analysis of the nature of ancient

Greek agriculture, will certainly add important hard data to current theoretical debates and improve our understanding of the ancient economy.

It is clearly imperative for a better understanding of ancient agriculture and farming systems that we combine the information from plant remains with the evidence from other sources already available. It is only then that site-specific information on husbandry regimes and practices can be integrated in an overall approach to land, labour, management strategies and their subsequent impact on the economic, political and social aspects of Greek society of the Classical period. It is with such integration of information that the reconstruction of ancient agriculture will move from a static approach recording and interpreting the material culture to an understanding of the dynamic processes behind the domestic life of ancient Greece.

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PART III

MARKETS AND TRADE NETWORKS

The Evidence of Transport Amphoras

PATTERNS OF AMPHORA STAMP DISTRIBUTION

Tracking Down Export Tendencies

Tania Panagou

The transport amphora was the most common form of jar used in ancient commerce. Many of these amphoras are marked with stamps, which permit us to locate their place of origin. As a result, scholars have for a long time used amphora stamps in their studies of ancient trade to track the flow of goods and to locate trading networks (Lawall 1998: 74). One can approach the study of amphora stamps either from the perspective of the exporting community or the importing community/region (e.g., Tzoché 2010). In publications that record stamped amphoras found in one area (importing center), there is often an analysis of the different types of amphora stamps and an attempt to identify the communities which exported these stamped amphoras based on their find spots, that is, the importing center (e.g., Ariel 1990: 14–17, table 1). Another type of study examines an individual series of amphora stamps exported from one community or region, such as the Rhodian or the Thasian (e.g., Bon and Bon 1957: 537–8 index; Étienne 1990: 216–20 with fig. 4; Avram 1996: 39–50; Garlan 1999a: 83–92; Conovici 2005; Lund 1999; Lund 2011). On the other hand, there have been a few attempts to provide general lists with distribution figures for several classes of stamped amphoras, and the few that have been published are not very extensive (for one of the more extensive lists, see Sherwin-White 1978: 237–9).

The aim of this chapter is to present and analyze the distribution of amphora stamps originating from the production centers around the Aegean and the



9.1 Map: Production Centres of Stamped Amphorae, with Approximate Counts of their Stamps.

Ionian Sea (Figure 9.1).¹ Certainly, an exhaustive count of the known stamps, especially those from the larger groups, is impossible, because new stamps are published every year. New finds and new publications will always increase the number of known amphora stamps and increase the totals from a given area. On the other hand, it is now possible to discern some basic patterns of distribution, which future discoveries should not alter to any major extent. For this reason, I hope that an attempt to collect as much data as possible about amphora stamps and to provide a preliminary analysis of these findings can point to some tentative conclusions and stimulate further discussion.

As one can see from the map in Figure 9.1, stamped amphorae in mainland Greece, the islands, the western coast of Asia Minor and the Propontis can now be assigned to at most fifty-eight cities (or regions). In three cases, the attribution of stamps to cities is doubtful or uncertain: Achilleion, Halicarnassus and Mylasa (Panagou 2010: 118–19, 107–10, 317–19). In four more cases, there are stamped amphorae that remain unpublished or require further study to

make the attribution safe: Aigion, Leucas, Maroneia and Cephallenia, or more precisely Kranioi (Panagou 2010: 76–80, 285–9, 467, 468; Sotiriou 2012: 372). Leaving these seven cases aside, this chapter will examine the distribution of amphora stamps from the remaining fifty-one cities. These stamped amphoras have been dated from the fifth century BCE at the earliest to the first century BCE at the latest, with the majority dated from the fourth century BCE to the early first century BCE.

A quick glance at the map in Figure 9.1 reveals a large number of production centers (see also Empereur and Hesnard 1987 and Garlan 2000: 50 for simple lists of cities that applied stamping), which would suggest a very large total volume of production if one were to assume that all these communities were operating on the same scale as the better-known centers of Rhodes, Cnidos or Thasos. All of these centers did not produce at the same level, as is evident when one compares the huge differences in the numbers of known stamps for each center (Figure 9.1).

To obtain a more accurate view of the practice of stamping amphoras, one must bear in mind that only a small, but by no means negligible, percentage of the more than one thousand *poleis* existing ‘at any given time in the Classical period’ (Hansen 2006: 31. Cf. Hansen and Nielsen 2004: 53–4) stamped amphoras. If we add centers from the rest of the ancient world (Black Sea, Cyprus, Syro-Palestine, Cyrenaica, Sicily, Italy, Massalia) to those shown on the map, we reach a total of approximately eighty centers.

METHODOLOGICAL ISSUES IN ANALYZING THE EVIDENCE OF AMPHORA STAMPS

One must take into account several methodological issues when analyzing amphora stamps as evidence for trading relations between different communities (Empereur 1982; Davies 1984: 274; Gabrielsen 1997: 65; Lawall 1998: 74). Before examining patterns of amphora stamp distribution, one must set out the limits of the evidence. First of all, it is inevitable that the archaeological record will always reflect only a portion of the material remains of the ancient world. Chance and several other factors determine what stamps are found, studied and selected for publication (cf. Lund 1999: 188 for inadequate publications). The picture of ancient trade we reconstruct on the basis of artifacts found in excavations is inevitably incomplete. The most important factor to bear in mind when analyzing trade patterns based on stamp counts is the fact that stamped amphoras comprise only a small percentage of the overall amphora production. Many amphora series were never stamped, and this means that our sample may give a distorted view of the overall picture (Lawall 1998). If we add the communities that produced unstamped amphoras, we would have a much longer list of cities producing and exporting amphoras. On

the other hand, even in the case of cities that did produce stamped amphoras, these cities did not always stamp amphoras at a constant rate. The percentage of stamped amphoras out of the total number of amphoras therefore varied not only from city to city but also from one period to another in the same city or from one workshop to another workshop in the same community (Empereur 1982; Finkielsztejn 1995: 282–3; Lund 1995: 298; Lund 1999: 188).² As a result, mere stamp counts do not offer us solid ground for the evaluation of the extent of ancient trade. The study of shipwrecks illustrates the problem. Although most of the cargos found in shipwrecks consist of amphoras, the number of stamped amphoras represents an extremely small percentage of the total number of amphoras found in these shipwrecks (Gibbins 2001: 297–304). This varying frequency of stamping applied to amphoras would cease to be so confusing, if we had the answers to the still open question about the exact meaning and purposes of the stamps (civic, fiscal purpose, certification of capacity, organization in the place of production, etc.; see Garlan 2000: 152–72; Panagou 2010: 431–58).

Another important obstacle to calculating the amount of trade conducted by each city is presented by the varying capacities of the various amphora types. For example, a Thasian stamped amphora may well correspond to a volume of 6.6 liters, while a Coan up to almost seven times more, that is, up to 44 liters.³ One cannot therefore simply count the number of stamped amphoras produced by one city and compare it with the number of stamped amphoras from another city to get an idea about the comparative volume of trade conducted by each city. Even if the number of stamped amphoras from one city was the same as that from another city, we cannot conclude that they exported a roughly similar amount because the capacities of the amphoras in one city may have been much greater than those of the other city.

Furthermore, we are often uncertain about the attributions of stamps to exporting cities. The most complicated case seems to be that of Cos. It has long been taken for granted that every double handle originates from the island of Cos. But as the study of stamped amphoras progresses, it has become clear that Miletus, Panormos (near Miletus) and Colophon also produced such types (Jöhrens 2009: 213–19, 230; Mommsen, von Haugwitz, and Jöhrens 2010: esp. 50). We may therefore need to reduce the number of double handles attributed to Cos and in turn reassess our views about the volume of exports from Cos. We should also remember that many stamps and amphora types have not been identified yet (ca. 2,000 unidentified stamp types are recorded in V. Grace's files). On the other hand, it is doubtful that from the unattributed stamps found so far any major production center remains unidentified.

Another factor that makes it difficult to interpret amphora stamps as evidence for ancient trade is the secondary use of amphoras. Unbroken jars were

often reused. As a result, an amphora may be found in a location determined by its reuse and not because it was deposited there immediately after being imported. This makes it difficult to link the find spot of an amphora to an importing center. But this factor does not lead to serious distortions because it appears that amphoras were reused in a confined area, not very distant from the place to which they were imported (Lund and Gabrielsen 2005: 164–5; Lawall 2011a).

A substantial gap in amphora stamp studies lies in the absence of strict relative and absolute chronology for most of the series. In effect, only stamps of Rhodes and Thasos (and on a broader level those of Cnidos) can be closely dated. Consequently, we cannot trace the fluctuations of trade with chronological precision (Davies 1984: 274). Still, we can start by using the existing dating methods to identify broad chronological differences while counting stamps.

A different problem in our ability to interpret amphora stamp distribution has been highlighted by Gabrielsen (1997: 65). By the example of the donation of 10,000 jars of Rhodian wine to Sinope in 220 BC, reported by Polybius (4.56.1–5), we should be warned in linking amphora stamps directly and exclusively with trading activities (see also Rauh 1999: 181 note 3; Finkielsztein 2011). Apparently, when evaluating stamp distribution figures, we should take into account also activities other than trade in the same way as Davies has pointed out five major mechanisms responsible for the distribution of coins (1984: 279–80: payment for troops, subsidies/bribes/gifts, booty, taxation, trade).

In addition, a general problem in the interpretation of amphoras in ancient trade is that they are often too easily viewed as containers of wine and olive oil. This often leads to false assumptions, because transport amphoras were used for a vast variety of goods, ranging from honey and fish to pitch and alum (Lund and Gabrielsen 2005: 162; Panagou 2010: 9–13; Lawall 2011b).

At the same time, it is essential to keep in mind that various goods were transported in other forms of containers as well, such as sacks or *askoi*, or even in bulk (Panagou 2010: 8, 9). Thus, the estimation of the trading ability of a given region cannot be based solely on stamps. Stamps offer us but a piece of the puzzle.

AMPHORA STAMP DISTRIBUTION

Despite the problems encountered when using amphora stamps as evidence for ancient trade, they still provide much valuable information about export patterns and advance our knowledge of the ancient economy. It is important to count the number of recorded stamps at any given location because

this helps to determine whether production was short-lived or long-lasting. However, the total number of the stamps found at one place does not determine the breadth of the distribution by itself. A stamped production, however small it may be in numbers, may be found at various sites and at a great distance from their place of origin. Consequently, even such a limited production can be linked with broader networks of trade.

Obviously, the size of stamp distributions is shaped by three main factors: (1) the distance of the find spot from the city that produced the stamped amphoras, (2) the number of different find spots, and (3) the actual quantities of stamps found at each site and in general. Based on these factors, after combining and studying the data, one can detect four patterns in amphora stamp distribution: (1) limited, (2) medium, (3) wide and (4) widest distribution.

Category 1: Cities with Limited Distribution of their Amphora Stamps

There are twenty-two cities in the category of limited distribution. These cities do not offer strong evidence for a consistent or far-reaching export trade. However, it is possible to identify various tendencies in this group of cities. Because of considerable differences in the distribution of their stamps, these productions can be further divided into the following three subgroups.

Subgroup 1a: Regional Finds

First of all, we find production centers showing an extremely narrow circulation of their products. Their stamps remain undated and are found either locally or in the wider region of the city in question. In this pattern we can place nine cities: Dyme (one stamp in Aetolian Chalcis), Hephaistia (one stamp at the Cabeirion on Lemnos, plus one uncertain in Odessos), Iasos (one stamp in Iasos and one of unknown origin in the National Archaeological Museum in Athens), Meliboia (two or three stamps in Pella), Mytilene (two stamps on Lesbos, one on Thasos), Pydna (one stamp in Pella), Pylos (one stamp in Corinth), and the uncertain attributions of productions to Antandros (one stamp in Pergamon) and to Lamponia (one stamp).

It is interesting that all of these cases are known from between one and three stamps. They have all been found near their city of origin, but not in it, with the exception of Iasos. It is quite possible that this picture of such a narrow distribution is misleading; future finds or future identifications may increase the number of stamped amphoras produced at any of these sites. Nevertheless, the combination of restricted distribution with limited volume of production probably reflects an extremely low production of stamped amphoras. Based on

the stamps, the products of these cities carried in amphoras seem to have been exported in small numbers and only within the adjoining region.

Subgroup 1b: Distant Isolated Finds

Similar conclusions can be reached for cities that are likewise represented by isolated stamps that are undated but have been found farther away from their place of origin. Among these cities are Melos with a stamp in Rhodes, Tanagra with a stamp in Pella and Tenedos with a stamp in Kato Polydendri, Magnesia. More distant but still isolated finds originate possibly from Naxos in the Aegean with two stamps (one in the collection of I. Demetriou in Alexandria and another of unknown origin in the collection of the National Museum in Athens) and from Theangela in Caria (one stamp in Alexandria).

The volume of production in these cities appears to be extremely low. Stamping amphoras was by no means a common procedure in these cities. Nevertheless, the few existing stamps indicate that goods from these cities were transported in stamped amphoras and reached distant locations. Judging from the distribution and the quantities of these stamps, we may assume that these low volumes of production were exported as supplementary cargos and not in large shiploads on a regular basis.

Subgroup 1c: Mainly Regional Finds

In the case of eight other cities (Abdera, Amorgos, Eretria, Aeolian Cyme, Oisyme, Panormos by Miletus, Tenos and the uncertain identification of Gargara in Troas), we may trace mainly regional finds, as in [subgroup 1a](#), supplemented by some broader circulation, although always in limited numbers.

Abderan stamps, broadly dated from the mid-fourth to the second century BCE, have been found in Abdera (twenty stamps), Maroneia (five), Stryme (one), Zone (one), Thasos (one) and Delos (one). Amorgian stamps have been found in Amorgos (two stamps), Antiparos (one uncertain), Thera (one) and the northern coast of the Black Sea (uncertain case). Eretrian stamps have been found in Eretria (one stamp, dated to the end of the fourth and to the third century BCE) and Olbia (one), and one example (find spot unknown) is kept in the collection of the National Museum in Athens. Cymeian stamps, dated to the fourth century BCE, have been found in Cyme (two stamps), and Kallatis (one). Oisymeian stamps, dated from the mid-fourth till the mid-third century BCE, have been found in Oisyme (two stamps), Thasos (one), Amphipolis (one), Abdera (two), Maroneia (three), Doriskos (one), Nymphaion (one), and Gorgippia (one). Panormian stamps have been found in Iasos (two stamps), Miletus (one), and Pella (one). Tenian stamps, dated to the end of the third until the middle of the second century BCE, have been found in Tenos (one amphora stamp plus six non-amphora stamps), Athens (one uncertain) and

Pella (one). Three stamps attributed to Gargara have been found in Pergamon and one of unknown origin is kept in the collection of the National Museum in Warsaw.

The fact that stamps of these cities have been found in distant locations probably indicates different dynamics from those of the cities with strictly regional finds ([subgroup 1a](#)). Still, in the face of the small total number of stamps and the limited number of find spots, there is no evidence for well-organized and major, long-term routes of exchange. Among these cities, the cases of Abdera and Oisyme stand out because they are known from more finds (twenty-nine and twelve stamps in contrast to three or four from the rest of the cities of this category). They show a tendency toward a more expanded version of this class (see [subgroup 2b](#)).

Category 2: Cities with Medium Distribution of their Amphora Stamps

Medium distribution is found in twenty-one small- and medium-size productions. It does not reflect a medium radius of finding places around the place of origin, but a medium number of finding spots and actual stamps found. We may again group these productions into three subgroups according to the sites and to the numbers of stamps found. In six cases there is a general scattering of finds, that is, a medium-size participation in a wide trade network; in eight cases they have been found mainly regionally, indicating strong regional exchanges supplemented by some broader trading activity; finally, in seven cases one can trace particular concentrations in certain regions for reasons that remain to be investigated.

Subgroup 2a: General Dispersal

First, we list here the stamped amphora productions of six cities: Abydos (possible dating from the fourth to early third century BCE), Alexandria Troas (probable date in the third century BCE), Colophon (uncertain dating from the mid-fourth to the mid-third century BCE), Cyzicus (vaguely dated to the fourth or third century BCE), Lesbos (dated from the end of the fifth to the fourth century BCE) and Ouranopolis (dated to the end of the fourth until the beginning of the third century BCE). These productions tend to show a general medium-sized dispersion at various locations without any particular concentration (see [Table 9.1](#)).

Based on the findings shown in [Table 9.1](#) and in comparison to the previous category of limited stamp distribution, we may suggest that these cities participated on a regular basis in a wide trade network. However, they are known only by a few items, which may indicate that they were probably relatively short-term efforts.

TABLE 9.1. *Find Spots of Amphora Stamps from Cities of Subgroup 2a*

Production centers Find spots	Abydos	Alexandria Troas	Colophon	Cyzicus	Lesbos	Ouranopolis
Production city					I	
Corinthia				I	2	
Attica				I		
Athens		I	3		2	
Euboea						
Aegean islands		I (Cos)				I (Thasos)
Macedonia						
Aegean Thrace	I					3
Eastern Black Sea	2	I				2
Northern Black Sea		2	3		4	I
Troas	I	2				
Lesbos				I	s. 1st row	
Aeolis	I			I		
Samos					I	
Rhodes					I	
Egypt	I		I			
Alexandria			3	I		I
Collections		I				
Total number of stamps	6	8	10	5	11	8

Note: In the lists presented in this chapter, the find spots of the stamps are arranged in broad regions. The definition and the order of the regions listed are set according to Hansen and Nielsen 2004, with some further divisions where needed, e.g., Ionian islands, Levant, Egypt, etc. Some sites with exceptional collections of stamps are excluded from their region and mentioned separately, e.g., Athens, Delos, Alexandria. This arrangement of the distribution lists according to regions has been selected for reasons of uniformity and comparability.

Subgroup 2b: Mainly Regional

Next, we have series of stamps that have been found at distant sites, but their main volume comes from or near their place of origin. In this category we have the productions of seven cities (see Table 9.2): Ainos (dated from the last

TABLE 9.2. *Find Spots and Counts of Amphora Stamps from Cities of Subgroup 2b*

Production centers Find spots	Ainos	Corinth ("Corinthian A")	Ilion/ Troas	Miletus	Pergamon	Samos	Samothrace
Production city	6	143	15+	77	19+	92	1,300
Sicily		2					
Ionian Islands		1					
Corinthia	at least 1	18 (excluding Corinth)	1				
Argolis		1					
Attica		1					
Athens	2	8	2	4	3	1	2
Thessaly	1						
Aegean Islands	4 (Thasos)		2 (Lemnos, Thasos)		2 (Delos, Thasos)	1 (Cos)	2 (Thasos)
Macedonia		unknown no.	1			1	1
Aegean Thrace	100	1	6		2	1	221
Inland Thrace							5
Eastern Black Sea	10+	1	3	1			1
Northern Black Sea	at least 3	1	5		2	1	
Gordion				2			
Troas	at least 2						1
Lesbos			1				
Pergamon			1				
Ionia	1		1	8			
Caria				3			
Rhodes				1			
Levant					1	3	
Egypt			1	2		4	
Alexandria		1		4	2	8	
Carthage		1					
Collections		7	2	13		3	
Total number of stamps	130	186^a	41	115	31	115	1,533

^a According to the estimation of Koehler (1978a: 50), the total number of known Corinthian A stamps is 200.

quarter of the fifth to the third century BCE), Ilion/Troas (dated to the third quarter of the third century BCE and the second half of the second century BCE), Corinth (earliest examples are dated to the seventh and sixth centuries BCE and the latest to the first half of the second century BCE, but with the main production in the second half of the fourth and the third century BCE), Miletus (dated from the end of the third century to the beginning of the second century BCE), Pergamon (*terminus ante quem* the 160s BCE), Samos (dated to the last quarter of the fourth century BCE) and Samothrace (dated from the mid-fourth century to the beginning of the third century BCE). The difference between this subgroup and [subgroup 1c](#), where we also found mainly regional distribution, lies in the significantly larger numbers of stamps and find spots.

Stamps from these seven cities have been found at a medium dispersion, while their largest numbers are clustered in the production city or its surrounding region. These cities are clearly participating in a long-distance trade network, but at the same time most of their trade is confined to the adjoining region.

However, there are two major caveats to consider when analyzing these regional networks. First, large numbers of stamps found in the production center are not necessarily an indication of local exchange. This is the case with Samothrace, where we have a huge amount of stamps (approximately 1,300) found on the island itself. Almost all of these stamps originate from the excavation of workshops producing amphoras and cannot be viewed as evidence for local trade because we do not know where these amphoras would have been sent once they left the workshop. Still, Samothracian stamps are well represented in adjacent areas, and Samothrace therefore fits into the pattern of medium distribution with strong regional impact. Second, the concentration of stamps in a certain region is sometimes taken as evidence for the identification of their place of origin (e.g., for Ilion/Troas and Pergamon). If this concentration of finds in an area is the only way of identifying where the amphoras were produced, then the identification should be considered as fragile. As a result, when talking about local or regional distribution in this case, one must avoid circular arguments.

Subgroup 2c: Medium Distribution with Particular Concentrations

A third subgroup of the medium size dispersion of stamps consists of six groups of amphora stamps: Chian (dated to last third of the fifth century BCE), Erythraean (dated to the third quarter of the fifth century BCE and the second half of the fourth century BCE), Hierapytnian (dated to the second half of the second century BCE), Ikian (mid-fourth to early third century BCE), Mendeian (dated to the end of the fifth and the beginning of the fourth century BCE) and Peparethian (dated from the first to the third quarter of the fourth century BCE) (see [Table 9.3](#)). The Classical stamped production

TABLE 9.3. *Find Spots and Counts of Amphora Stamps from Cities of Subgroup 2c*

Production centers Find spots	Chios (Classical)	Erythrae	Hierapytna	Ikos	Mende (Classical)	Peparethos
Production city		unknown no., (10 in nearby wreck)		6		
Corinthia	2	1			1	
Athens	16	26		5	18	2
Euboea				1		
Aegean Islands		3 (Thasos)			7 (Thasos), 2 (Lemnos)	
Macedonia				1		
Aegean Thrace		5		2	2	
Inland Thrace					2	
Eastern Black Sea and inland		6	2	1	7	6
Northern Black Sea and inland	23	4		9	13	20
Pergamon	1					
Caria					3	
Crete			1+1?			
Cyprus	1					
Alexandria			8	2		
Collections		5		3	7	unknown site: 6
Total number of stamps	43	60+	11+1?	30	62	34

of Chios and Mende needs to be separated from their Hellenistic stamped amphoras, because of significant changes in style and frequency of stamping (the Hellenistic stamps of Chios and Mende are arranged in category 3).

Stamped amphoras of these small- to medium-sized productions travelled far from their place of origin, showing special concentrations in certain regions: Chian stamps are mainly found in Athens and the Crimea, Erythraian in Athens, Hierapytnian in Alexandria, Ikian and Mendeian in

Athens and at the Northern coast of the Black Sea, and Peparethian in the Black Sea.

We can also place the case of Zacynthos in this category, although only a handful of undated stamps are known. Its stamps have all been found in a narrow range of sites, which were all probably reached through the Corinthian Gulf (Athens one, Corinth three, Orchomenos one). Export to areas around the Black Sea is striking also for the stamps of Smyrna (three stamps in Istros and one in Olbia, dated to the second century BCE), whereas three more stamps of Smyrna have been found in nearby Pergamon.

It is particularly interesting that in these cities with mid-range distribution, we may detect a distinctive pattern in their export routes. Obviously, there may have been several contributing factors to explain this distribution: historical, political, social, geopolitical, economical, traditional or circumstantial, to name a few. The exact reasons for these tendencies can only be sought and analyzed in a meticulous study of each production and consumption center taken by itself.

Category 3: Cities with Wide Distribution of their Amphora Stamps

As expected, large-scale distribution is attested in cities that produced large numbers of stamped amphoras, such as Acanthus (dated from the mid-fourth to the beginning of the third century BCE), Hellenistic Chios (dated to the third through first centuries BCE), Ephesus (dated to the second half of the third and from the mid-second to the beginning of the first century BCE), Corcyra (earliest stamps dated to the late sixth and fifth centuries BCE, but the majority of stamps are dated to the second half of the fourth and the third centuries BCE), Hellenistic Mende (dated from the fourth to the early second century BCE) and Paros (dated to the third and early second centuries BCE). Stamps from these six cities have been found at a wide range of sites and in large quantities (see [Table 9.4](#)).

It is obvious that these productions play a fairly important role in a large trade network. The products in question seem to have been regularly transported for a long distance, and there were many markets to which they were shipped. This points to a strong, constant, well-organized production and a substantial trade network.

If one examines this wide distribution more closely, large concentrations of stamps appear in certain regions: Acanthian in the Northern Aegean and the Black Sea; Ephesian in the Southern Aegean, the Levant and Egypt; Corcyrean toward the west, but also in Athens, Corinth and Pella; Mendean and Parian in the Aegean and the Black Sea. Chian stamps, on the other hand, show an extremely wide and universal dispersal of stamps with big concentrations in Athens, Delos, Pergamon and Alexandria.

TABLE 9.4. *Find Spots and Counts of Amphora Stamps from Cities of Category 3*

Production centers Find spots	Acanthos	Chios Hellenistic	Ephesus ("Nikandros group")	Corcyra ("Corinthian B")	Mende (Hellenistic, "Parmeniskos group")	Paros
Production city	172	82	31	77	17	12
Italy	1	1	1	2		2
Sicily		8		29		
Adriatic				3		
Epeiros			1	1		
Acarmania				4		
Ionian Islands	2			3		
Boeotia	1			1		
Corinthia		8	6	166	6	2
Achaia				2		
Elis				4		
Argolis				4		
Saronic Gulf				1		
Attica	4			7		4
Athens	4	37 ⁰	3	93	5 ⁰	54
Euboea		26			8	2
Thessaly		1			5	
Aegean Islands	1 (Lemnos), 37 (Thasos)	11 (Cos), 3 (Lemnos), 2 (Tenos), 3 (Thasos)	3 (Cos), 1 (Cythnos), 1 (Melos), 2 (Tenos), 1 (Thera)	1 (Paros), 4 (Thasos)	3 (Lemnos), 1 (Tenos), 3 (Thasos)	5 (Thasos)
Delos	2	142	40	1	13	16
Macedonia	38	11	1	56	44 ⁰	8
Aegean Thrace	573	5	2		34	
Inland Thrace	82	1			18	
Eastern Black Sea and inland	90	5	4		19	66
Northern Black Sea and inland	44	35			35	8

Find spots \ Production centers	Acanthos	Chios Hellenistic	Ephesus ("Nikandros group")	Corcyra ("Corinthian B")	Mende (Hellenistic, "Parmeniskos group")	Paros
Troas	5				3	2
Lesbos		3			1	
Aiolis		1	1		1	
Pergamon		154	26		2	1
Ionia	1	15	6		3	5
Caria		6	2			
Crete		1		2		1
Rhodes		15	1	2		
Cyprus	5	28	1	3	3	
Levant	1	45	18	2	1	2
Egypt		12	16		2	1
Alexandria	7	160	106		9	6
Libya		1				
Carthage		1				
Collections	120	174	11	35	62	17
Total number of stamps	1,190^a	1,330	285	503	739	215

^a According to the estimation of Garland (2006: 279), the total number of known Acanthian stamps is 1,600.

In the markets of these particular regions there seems to have been a regular demand for the goods transported in the amphoras of these six cities. Therefore, we can assume the existence of an organized production line and of an elaborated trade network serving these markets.

Category 4: Cities with Widest Distribution of Their Amphora Stamps

It should come as no surprise that the most extensive distribution of amphora stamps comes from the four largest production centers of stamped amphoras: Rhodes (dated from the end of the fourth to the first century BCE), Cnidos (dated from the late fourth to the first century BCE), Thasos (dated to the late sixth and early fifth centuries BCE and from the early fourth to the late third century BCE) and Cos (dated from the late fifth to the first century BCE). Even in this category of production centers that had the widest

TABLE 9.5. *Find Spots and Counts of Amphora Stamps from Cities of Category 4*

Production centers	Cnidos	Cos	Rhodes	Thasos
Find spots				
Production city	82 (peninsula)	2,000	8,000	15,000
Spain	3	1	54	
France		5	79	
Italy	29	6	430	3
Sicily	27	7	1,740	
Adriatic	3	1	59	
Epeiros	2		17	1
Acarnania	2		3	
Ionian Islands	1			
Corinthia	2,025	4	162	27
Elis			4	1
Messenia			3	
Cythera/Anticythera			7	
Argolis	132	4	19	
Saronic Gulf	1		3	1
Attica	92	3	27	4
Athens	21,218	220	6,142	1,098
Euboea	123	4	28	23
Thessaly	5	1	6	16
Aegean Islands	49 (Cyclades), 11 (Lemnos), 7 (Syme), 5 (Thasos)	1 (Paros), 1 (Lemnos), 9 (Syme)	56 (Cyclades), 12 (Lemnos), 15 (Thasos)	2 (Chalke), 3 (Cyclades), 14 (Lemnos)
Delos	4,802	97	1,672	51
Cos	30	see 1st row	396	5
Tenos	253	5	47	2
Macedonia	201	151	567	284
Aegean Thrace	23	11	86	2,091
Inland Thrace	28	13	124	197
Propontis			11	1

Production centers Find spots	Cnidos	Cos	Rhodes	Thasos
Eastern Black Sea and inland	240	174	1,942	2,133
Northern Black Sea and inland	206	161	15,000	1,146
Southern Black Sea	1		60	
Gordion				54
Troas	22	2	40	25
Lesbos	5	4	77	6
Aiolis	2		16	2
Pergamon	36	34	1,108	101
Ionia	12	33	162	9
Samos	41	66	886	15
Caria	43	43	262	11
Lycia	3		24	
Crete	11	9	90	5
Rhodes	106	8	see 1st row	65
Pamphylia/Cilicia	4	1	120	3
Cyprus	63	45	3,564	42
Levant	54	96	5,026	33
Mesopotamia			47	2
Arabia			6	
Egypt	200	127	2,204	26
Alexandria	7,116	1,503	100,000 ^a	216
Libya			5	8
Carthage	2		536	
Collections	13,759	116	4,821	811
Total number of stamps	51,080	4,966	155,765^b	23,537^b

^a According to the estimation of Empereur (1998b: 398), this is the approximate number of Rhodian handles in the Museum of Alexandria.

^b According to the estimation of Garland (2007: 565–6), the total number of known Rhodian stamps is 200,000 and of Thasian 30,000.

distribution of their stamps, once more, beside the overwhelmingly wide scattering of the stamps, one can identify specific export routes (see [Table 9.5](#)).

Cnidian stamps form the second biggest class of amphora stamps. They are widely scattered, found in about 150 sites, and often in great numbers. They show particularly great concentrations in Athens, Corinthia, Argolis, Euboea and the Cyclades. We may, also, notice that the quantities of Knidian stamps found in Cnidos are still very low, but this is just a matter of lack of extensive excavation comparable to those at the large workshop sites at Thasos, or of absence of relevant collections made from the area.

The picture that emerges from the distribution of the Coan stamps must be handled with caution. It is a picture of an extremely wide distribution with a balanced number of finds widely scattered (from roughly 100 sites), except for Alexandria. But in the question of Coan trade, two main problems persist: first, the low percentage of stamped Coan amphoras in relation to unstamped ones, and second, the possibility that many of the finds registered as Coan may be Milesian.

The distribution of Rhodian stamps is the broadest; it covers most parts of the ancient world. Rhodian expansion greatly exceeded that of other production centers. It is not only the huge total number of stamps (approximately 200,000), but also the vast number of find spots (over 300), which extend to the edges of the ancient world. Of the approximately 300,000 amphora stamps catalogued, almost two-thirds are Rhodian. There is no comparable figure for the rest of the cities producing amphoras.

An impressive number of Rhodian stamps are located in the collections of Alexandria (100,000), and their predominance extends to the Levantine coast and Cyprus, to the whole trade route from Rhodes to Egypt. A market split between Rhodes and Cnidos has been observed. And so this later second-century phenomenon of Cnidian exports facing the Aegean and Rhodian exports facing south has often been discussed in terms of Rome's actions (Rauh 1999; Finkielsztejn 2001).

Thasian stamps are reported from almost 150 sites. The vast majority of Thasian stamps have been found on the island of Thasos itself. As in the case of Samothrace discussed earlier, the large number of stamps found on the island itself should not to be interpreted as evidence of massive local circulation of stamped amphoras. On the contrary, the large number of stamped amphoras found on Thasos is the result of long-term excavation and analysis of the workshops producing Thasian amphoras. Unlike Rhodes and Cnidos, Thasos' exported amphoras mainly trend to the Northern Aegean and the Black Sea (see Tzochew, [Chapter 10](#) in this volume).

As stated in the beginning of this essay, the ability to accurately date Rhodian and Thasian stamps to certain periods makes it possible to connect fluctuations in the volume of exports and imports to historical events. But this topic goes beyond the analysis of the overall distribution of stamps

(Gabrielsen 1997: 65–71; Rauh 1999; Lund 1999; Tzoché 2010; Lund 2011; Lawall 2011a: 41–2).

In this last group of productions with the widest distribution and the largest volume, it is obvious that we are dealing with well-organized export centers with numerous trade links and an extensive trade network. Thasos, Cnidos and Rhodes tend to reveal greater concentrations in certain areas, although at the same time the universal dominance of the Rhodian class speaks for an exceptional production and exportation center.

AMPHORA STAMP DISTRIBUTION AND THE ANCIENT ECONOMY

Obviously, amphoras as transport jars, whether stamped or not, are closely connected not only to potters, but also to various persons participating in the production and the distribution of the goods transported in these jars. A wide range of people, from landowners, workers and farmers to fishermen, middlemen, distributors and buyers in wholesale or retail, but also various official fiscal mechanisms are involved in this discussion (cf. Lawall 1998: 73–4). But we do not yet know for sure either the exact meaning(s) of the stamps or the relationship between those who produced amphoras and those involved in agricultural production. The data does not provide secure information about the economic practices of individuals, their workshops or households. As a result, the analysis of amphoras must remain at the level of *poleis* as production centers in general.

For the four leading stamped amphora production centers, Rhodes, Cnidos, Cos and Thasos, as also for the immediately smaller category (Acanthus, Chios, Ephesus, Corcyra, Mende and Paros), the wide-ranging flow of stamps, that is, of stamped amphoras and their contents, clearly points to an economy that has moved far beyond self-sufficiency. The breadth of the distribution and the quantities of stamps attest to the existence of a dense network of transactions, totally different from what we would assume for a closed society. Goods were regularly produced for export and transported, for many generations, to numerous destinations ranging from neighboring areas to distant locations. On the import side, there were clearly a large number of markets for merchants to choose among. The picture that emerges is one of a set of major cities exporting and importing on a regular basis, not of communities disposing of an occasional surplus. Moreover, the concentrations of stamps of some of these classes in certain regions offer valuable information for understanding the specific reasons for exports and imports. These case studies offer possibilities for a better understanding of the way markets and trading routes were organized.

On the other hand, in the category of medium-size distribution (category 2), the evidence for these twenty-one communities does not suggest regular

activity. However, the dispersal of the stamps indicates that at least for a period these cities did not limit their exports to a small number of trading partners. They attempted to participate in a wide trade network even though most of their amphoras were distributed locally.

At a lower remove, the find spots of the stamps from twenty-two smaller productions ([category 1](#)) attest to limited productions and trade connections. Here, in most cases, we may speak about broadly regional trade links. At the same time, some of these productions appear also in distant markets, probably as a result of chance. Writing about trade in Roman Egypt, Alston states that ‘one document attesting a transaction may represent an ancient reality of hundreds of such transactions or just one’ (1998: 165). In the case of subgroups [1a](#) and [1b](#), it seems that we are closer to the latter conclusion. The reason for this may be the paucity of reported finds, despite the unambiguous identification of these stamps through the ethnic. Thereupon rests the assumption that stamping transport amphoras in these cities must have been a short-term practice without an important impact in the local economy. It appears that these amphoras were not produced for a continuous, wide-range export. Their products circulated for a short period and mainly at a regional range. They were never fully integrated into a broader exchange network.

However, it is crucial that most of these productions, which are found regionally, are minor. They indeed have minimal participation in markets. But the absence of a series of stamps does not betoken an absence of trade; it simply means that there was no trade in stamped amphoras. The use of stamps remained in these cases probably experimental or just a form of imitation of the larger classes.

On the other hand, the larger stamp classes always travel beyond local and regional borders. Once a production was growing, it did not confine itself to the immediate vicinity. But it can also have occurred in the opposite way: there was demand for the products abroad and as a result the production grew. It is also possible that greater productivity and wider diffusion went hand in hand. Evidently, these aspects of ancient economic life (production growth and diffusion breadth, that is, supply and demand) seem to be intimately related, partly as cause, partly as effect. In any case, stamping was obviously regularly applied when the production was large and the distribution wide.

In theory we would expect to be able to split the distributions into patterns, simply according to the distance of the importing centers from the production centers and thus identify strictly localized distributions (i.e., within the same city-state), from regional (i.e., within the broader geographical entity where the production site belongs or neighboring areas), and from widespread distribution.

In practice, however, there seems to be no such pattern. From the information offered by the stamps, there is no evidence for strictly localized circulation

of goods in stamped amphoras. The very form and nature of these jars argues for distant transportations, since their shape was suitable for transport by ship. On the regional level, exportation of goods, carried in stamped amphoras, did exist (subgroups [1a](#), [1c](#) and [2a](#)). Stamped amphoras from these subgroups travelled exclusively or mainly within their own region or also within adjacent regions. To judge from amphora stamps these are relatively small productions and did not form a regular, long-term, regional exportation pattern, whereas regularly produced, stamped amphoras were always widely exported.

The absence or presence of stamps bears witness to the fact that there were many different kinds of production and markets in different places and at different times. As Lund has said, 'Each find or group of finds should be interpreted in its own right' (1995: 300). We are dealing with diverse separate export/import systems based on various market behaviors (Davies 1998: 237; Lawall, [Chapter 11](#) in this volume).

Some impressions of this diversity and the potential for interpreting amphora stamp distribution can be further achieved by looking at [Table 9.6](#) with counts of amphora stamps in a selection of four importing areas. The dominance of Rhodes is limited at Corinthian sites by the strong presence of Cnidian stamps, which surpass by far even the classes with tight bonds with this region (i.e., the Corcyrean and the Corinthian). In the west, Rhodes is followed at a great distance by Cnidos, in the east by Cos and in the Black Sea by Thasos. It is quite interesting that the west and the east show almost the same assortment of stamp classes. This is because the classes travelling to the west (except for Corcyra and Corinth) seem to be universally the most active and thus they exist in almost every broad area. The connections of Corcyra to the west, and of Acanthus and Mende to the Black Sea are evident (see [category 3](#)), but at the same time their stamps appear in the eastern markets, although in smaller numbers. Another striking issue is the huge variety of stamps travelling to the Black Sea, which includes not only communities producing large numbers of stamped amphoras but also those producing much fewer. At the same time, the imports in Corinthia, although they represent a smaller total amount of handles than the finds in the west or the east, show a greater variety, signifying the importance of this market.

We must also notice the absence of stamped amphoras from the communities discussed in this chapter in a number of regions (i.e., East and West Locris, Phocis, Megaris, Sicyonia, Arcadia, Triphylia, Lacedaimon, Doris, Eastern Black Sea), or the report of extremely low numbers in other regions, that is in Aetolia (one stamp of nearby Dyme), in Boeotia (one Acanthian, one Corcyrean, one Zacynthian), in Achaea (two Corcyrean), in Messenia (three Rhodian). It is striking that except for Argolis and Corinthia, there are hardly any stamped amphoras found in the Peloponnese. The question inevitably arises: Is this the result of inadequate research and publication or a reflection of a low level

TABLE 9.6. *Assortments of Amphora Stamps Found in Certain Areas in Descending Order*

A. Stamps found in Corinthia: 2,437	B. Stamps found in the West (Spain, France, Italy, Sicily, Adriatic, Carthage): 3,036	C. Stamps found in the East (Cyprus, Cilicia, Levant, Mesopotamia, Arabia): 9,220
1. Cnidian: 2,025 (4%)	1. Rhodian: 2,898 (1.4%)	1. Rhodian: 8,763 (4.4%)
2. Corcyrean: 166 (33%)	2. Cnidian: 64 (0.1%)	2. Coan: 142 (2.9%)
3. Rhodian: 162 (0.08%)	3. Corcyrean: 34 (6.8%)	3. Cnidian 121 (0.2%)
4. Corinthian: 161 (80%)	4. Coan: 20 (0.4%)	4. Thasian: 80 (0.3%)
5. Thasian: 27 (0.09%)	5. Chian	5. Chian: 1 Classical (2.3%)
6. Chian: 2 Classical (4.6%) / 8 Hellenistic (0.6%)	Hellenistic: 10 (0.7%)	/73 Hellenistic (5.5%)
7. Ephesian: 6 (2%)	6. Corinthian: 3 (1.5%)	6. Ephesian: 19 (6.7%)
8. Mendeian	7. Thasian: 3 (0.01%)	7. Acanthian: 6 (0.4%)
Hellenistic: 6 (0.8%)	8. Parian: 2 (0.9%)	8. Corcyrean: 5 (1%)
9. Coan: 4 (0.1%)	9. Akanthian: 1 (0.06%)	9. Mendeian
10. Zacynthian: 3 (60%)	10. Ephesian: 1 (0.3%)	Hellenistic: 4 (0.5%)
11. Parian: 2 (0.9%)		10. Samian: 3 (2.6%)
12. Lesbian: 2 (18)		11. Parian: 2 (0.9%)
13. Aenian: 1 (0.8%)		12. Pergamene: 1 (3.2%)
14. Ilian: 1 (2.4%)		
15. Cyzicene: 1 (20%)		
16. Pylian: 1 (100%)		
D. Stamps found in the Black Sea: 21,995 (Inland Thrace, Propontis, Southern/Northern/Western Black Sea and inlands)		
1. Rhodian: 17,137 (9%)	11. Erythraean: 10 (17%)	22. Corinthian: 2 (1%)
2. Thasian: 3,477 (12%)	12. Ilian: 10 (33%)	23. Hierapytnian: 2 (18%)
3. Cnidian: 475 (0.9%)	13. Ilian: 8 (19%)	24. Oisymeian: 2 (17%)
4. Coan: 348 (7%)	14. Samothracian: 6 (0.4%)	25. Pergamene: 2 (6.4%)
5. Acanthian: 216 (13%)	15. Ephesian: 4 (1.4%)	26. Amorgian: 1 (20%)
6. Mendeian: 22 Classical (35%) / 72 Hellenistic (10%)	16. Lesbian: 4 (36%)	27. Eretrian: 1 (33%)
7. Parian: 74 (34%)	17. Smyranean: 4 (57%)	28. Hephaistian: 1? (50%?)
8. Chian: 23 Classical (53%) / 41 Hellenistic (3%)	18. Alexandrian: 3 (37%)	29. Cymean: 1 (33%)
9. Peparethian: 26 (76%)	19. Colophonian: 3 (30%)	30. Milesian: 1 (0.9%)
10. Aenian: 13 (10%)	20. Ouranopolitan: 3 (37%)	31. Naxian: 1 (50%)
	21. Abydan: 2 (33%)	32. Samian: 1 (0.8%)

Numbers in brackets state the ratio of the given stamps to the total count of stamps of each class.

of imports into these regions? Intensive study of the findings of the excavations of the Greek Archaeological Service is required before one can draw any conclusions about the absence of amphora stamps in large areas of the Greek mainland.

Another interesting result of the study of the diffusion of amphora stamps is that most of the find spots lie along coasts. Yet, river transport as well as land transport is attested, but on a much smaller scale, as one would expect.

Despite much progress in the study of ancient amphoras, one still must admit ‘large and crippling gaps still remain ... in the study of amphora-handles as evidence of the flow of goods’ (Davies 1984: 260). After sketching the methodological issues associated with analyzing the evidence of stamped amphoras, this chapter has attempted to present and analyze the distribution of amphora stamps in a brief but comprehensive way. The documentation of this amphora stamp circulation allows us to sketch an outline of the ways in which various producers, markets and trade networks operated. Future studies will no doubt enable us to fill in the details of this broad picture.

NOTES

- 1 Extensive bibliographical notes concerning the quantities of known stamps discussed here and detailed maps are included in Panagou 2010. For obvious reasons of space and economy they have been omitted in this paper. The data derive largely from Virginia Grace’s files, supplemented by recent research. Grace’s files are housed in the archives of the American School of Classical Studies at Athens, and I wish to thank the head archivist, N. Vogeikoff-Brogan, for granting me permission to study the material and for all her unfailing assistance.
- 2 Known percentages of stamped in relation to unstamped amphoras are: in Erythrai 5%, in Corcyra 5.5 to 25%, in Cnidos (“Zenon A”) 15%, in Cos 1 to 10%, in Rhodes in the main periods up to 100%, but in the early Rhodian down to only 10%, in Samothrace 5 to 100%, and in Thasos 26 to 100%. For references see Panagou 2010: 163, 209, 263, 382, 447–8.
- 3 Measured volumes of amphoras: Acanthian ca. 8 and 34.74 liters, Corinthian 18–70 liters, Erythrean 25.12 liters, Cnidian 10.9–38 liters, Coan ca. 44 liters, Corcyrean 19.3–27.6 liters, Rhodian 22–29 liters for the normal sized amphora and 4–12.7 liters for the miniature amphoras, which are sometimes also stamped, Thasian 6.6 and 9.92 liters for type 1 and 20.87 liters for type 3. For references see Panagou 2010: 92, 140, 173, 211, 228, 246, 268, 373, 375, and 425.

MARKETS, AMPHORA TRADE AND WINE INDUSTRY

The Case of Thasos

Chavdar Tzochev

‘At once a dream and a nightmare’ is how John Davies (2001: 27) has characterized the potential of transport amphora evidence for economic history. Davies’ pithy observation rightly points out both the enormous potential of amphora studies and the well-known difficulties in using this evidence. His review of amphora studies emphasizes two related problems. On the one hand, working with this type of evidence requires specialized knowledge, which makes it unattractive for some economic historians. For most ancient historians the study of amphoras appears to be a very specialized field, the domain of a small group of international specialists communicating in their own languages (literary and figuratively). The other side of the problem is the scarcity of analytical works, which bridge the gap between ‘raw’ amphora data and their potential ‘consumers.’ It is true that during the 1980s and 1990s amphora studies were dominated by debates about the problems associated with deriving economic figures and historical conclusions from amphora sherds, much of it very pessimistic (Empereur 1982; Garlan 1999b: 140). Nevertheless, this sceptical approach brought several benefits: first, it prevented misguided conclusions based on improper methodology, and second, it stimulated the development of an improved methodology. After all, knowing what cannot be done with the amphora evidence is the right place to start when trying to discover what *can* be done with this evidence. At the same time, there has been a growing recognition that ‘if amphora studies are to contribute to economic

history, there must be interpretation' (Lawall 2001: 105). Since the late 1980s there have been an increasing number of attempts to use the data of amphora stamps to analyze the dynamics of trade and production and to place such data in their historical context (e.g., Avram and Poenaru-Bordea 1988; Avram 1996; Finkielsztejn 1999; 2001; Lund 1999; 2011; Conovici 2005). There have been fewer studies based on amphoras without stamps, and such studies are less ambitious in terms of precision, but address a wider range of issues in economic history (Lawall 2002; 2005). At present, the growth of published material and the improved understanding of the chronologies of amphora production have provided scholars with much more information, but this information will contribute little to our knowledge of the ancient economy unless there is a parallel improvement of the methodologies used to interpret this evidence.

This chapter presents an interpretative study of amphoras from Thasos during the fourth and third centuries BCE based on statistical analysis of the data provided by amphora stamps and aims to make a positive contribution to our understanding of the Thasian wine trade. The chapter includes an extensive methodological discussion and some suggestions about how to improve current methodology and then applies these suggestions to the Thasian data. The results thus obtained are used to consider the role of markets and market mechanisms in the production and transport of wine and wine containers.

WHY THASOS?

In the current state of research, few Greek city-states that exported amphoras have provided richer, more varied and more accessible evidence than Thasos. Literary sources contain many references to Thasian wine and Thasian amphoras, and several inscriptions preserve documents about the production and trade of Thasian wine (Salviat 1986). Because of this plentiful evidence, Thasos has often been cited as one of the earliest city-states producing wine on a large scale for export to foreign markets (Osborne 1987: 170; Unwin 1991: 97; Horden and Purcell 2000: 219; Migeotte 2009: 87). While it is often difficult to determine the contents of amphoras produced in other city-states, the ancient sources leave little doubt that Thasian amphoras served primarily as wine containers. The archaeological evidence for wine making and amphora production on Thasos exceeds what has been published for other amphora-exporting areas (Garlan 1986a; 1993; 2004–5; Picon and Garlan 1986; Brunet 1993: 207). Finally, a large number of the stamped fragments of Thasian amphoras spread throughout the eastern Mediterranean and the Black Sea has been carefully and systematically recorded, providing an excellent database for the study of Thasian trade (Garlan 1999a; Debidour 1999a). One of the main advantages for scholars is that the Thasians consistently marked their amphoras with stamps

over a long period, providing a standardized form of information for nearly two and a half centuries.¹

Viewed in this way, the evidence of Thasian amphoras appears to be a godsend. Despite its enormous potential to shed light on the economy of ancient Greece, however, there have been few attempts to interpret this evidence. The two French scholars, Yvon Garlan and Michel Debidour, who have provided most of our information about the Thasian stamps, have exercised great restraint in their discussion of the possible implications for the Thasian wine trade. There were two main reasons for their decision: first, they were both keenly aware of the methodological issues posed by the amphora evidence; and, second, they were convinced that market-based methods of analysis should not be applied to the ancient economy (e.g., Garlan 2001: 187; Debidour 2008: 107). Scholars working in the Black Sea area have studied Thasian imports in particular cities (Avram and Poenaru-Bordea 1988; Avram 1996; Lazarov 1999), but none of them looked at the big picture of the Thasian amphora trade – something that has only recently become possible.²

WHAT MARKETS?

Can we speak of a market for Thasian amphoras? Michel Debidour has recently posed this question (*‘Peut-on parler d’un marché des amphores Thasiennes?’*) and offered a negative answer, for which he gave two reasons: the gaps in the archaeological record, which make it hard to interpret, and the anachronism of the concept of market in regards to the ancient amphora trade (Debidour 2008: esp. 107). This opinion begs the question of the already common, but somewhat unsettled use of the term ‘market,’ not only in amphora-related studies, but also in studies of ancient trade in general.³ Normally, the term is used without definition, relying on the context and the common sense of the reader, which in most cases is sufficient. However, when addressing the correctness of this use, definitions are indispensable. In this sense, it will be more appropriate to modify Debidour’s question to ‘How can we speak of a market for Thasian amphoras?’

Undoubtedly, among the various meanings of ‘market’ certain examples would be anachronisms if applied to classical antiquity. It would be foolish to speak of a virtual commodity market for trade in futures contracts of wine amphoras. But many other meanings of the term are relevant. Leaving aside the various types of traditional marketplaces – urban or rural, permanent or periodic, wholesale or retail – the physical aspects and organization of the places of trade are intriguing enough, although apparently not meant in this context, and beyond the scope of the present contribution. Besides, there are several aspects of the term, used in modern economics, which are also applicable to

the ancient amphora trade. The concrete examples in the following paragraphs illustrate some of these uses.

1. During the fourth century and the first half of the third century, Thasian amphoras were consistently imported into the Black Sea area. Some 64 percent of all stamped Thasian amphora handles found outside the island come from sites on the periphery of the Black Sea; for the first three quarters of the fourth century BCE this figure goes above 88 percent.⁴ The ancients were aware that Thasian and other Aegean wines were traditionally sold in the Black Sea. This is seen in Polybius' statement that the places around the Pontus 'take our superfluous stock of olive oil and every kind of wine' (4.38), as well as in Demosthenes' statement that 'Wine is carried to Pontus from places around us, from Peparethos, and Cos, and Thasos and Mende, and from all sorts of other places' (35.35). Thus we can speak of the Black Sea as a 'market' for the Thasian wine amphoras in the sense of 'a geographic region considered as a place for sales.'
2. There were wines and then there were wines. Wine was an indication of social status in antiquity (Garnsey 1999: 118–19), and the Thasian wine stood at the high end of the quality spectrum, at least in Classical Athens. Salviat's (1986) comprehensive review of the references to Thasian wine in the written sources has shown that most of these references are found in Athenian authors of the fifth and fourth centuries and that Thasian wine is unanimously considered top-quality high-priced wine. Thasian wine is usually mentioned in the context of *symposia* and conspicuous consumption. Thus the textual evidence strongly suggests that the Athenian élite was a 'market' for Thasian wine in the sense of 'a subdivision of a population considered as buyers.' Again, this is not a purely modern point of view. Even if ancient Thasian winemakers had no idea who demanded their product abroad, traders at the end of the line certainly knew their customers.
3. Based on the distribution of Thasian amphora stamps, one can state that in the second half of the third century BCE the market for Thasian amphoras declined in the Black Sea, but remained stable in the Aegean. In this case 'market' stands for 'the business or activity of buying and selling a particular product or service.'

These are at least three different ways one could speak of a market in an abstract way. In the next section I will add a fourth one, a 'market' as 'a demand for a particular commodity or service.'

VOLUME AND FREQUENCY OF SUPPLIES

Very few Thasian amphoras have been preserved complete. Only several hundred have been found, of which fewer than 200 have been published. But there are myriad fragments spread throughout the Eastern Mediterranean and the Black Sea area. Some 28,000 fragments, mostly handles dating from the



10.1 Geographic distribution of Thasian Amphora stamps (C. Tzoché).

beginning of the fourth to the mid-second century BCE, are stamped. About 12,300 of these stamped pieces have been found outside the island of Thasos (Figure 10.1), each of them corresponding to a single amphora, exported abroad.

The concentrations of finds reveal the most significant importers of Thasian wine. Besides Athens (ca. 1,000 stamps), these are most of the large communities in the North Aegean – Abdera (ca. 670), Amphipolis (ca. 570), Maroneia (ca. 850), Doriskos (ca. 200); in Macedonia – Pella (ca. 300); in Egypt – Alexandria (ca. 190); in the interior of Thrace – Kabyle (ca. 110) and Sboryanovo (ca. 140); and most of all, in the Black Sea – Panticapaeum (ca. 900), Phanagoria (ca. 670), Olbia (ca. 440), Histria (ca. 800), Callatis (ca. 450), and Odessos (ca. 140).

The figures presented here are actually not high at all, if one takes into account the fact that they cover periods between one- and two-and-a-half centuries long. In rare cases the number of stamps from a single year found in one city may reach up to forty, but most are quite small – often, only a single stamp is recorded for a single year, and there are also years without

stamps. By approaching the problem quantitatively, one can interpret the low annual figures as an indication of scanty supply, and therefore analyze these numbers as an indication of small-scale opportunistic trade. For example, based on the information published for Histria, Brunet (2004: 85) has concluded that Thasian amphora exports to the Black Sea ‘represent the cargoes of only a few ships a year’ (*‘ne correspondent qu’à la cargaison de quelques bateaux par an.’*)

However, the archaeological record is rarely complete and provides only proxy data, which represent merely an unquantifiable part of the original total. A single stamp from a given year found at one site certainly does not indicate that one ship entered the city’s harbor that year to sell just one amphora. It means only that one stamp from this year has been discovered at this site. Hundreds or thousands of jars may have been sold in that year, but still remain unexcavated or completely lost to the archaeological record. The real numbers are beyond recovery, but the available ones are still valuable because they reveal an important fact: the regularity of the supplies. In some of the cities mentioned, particularly in those in which levels dated to the fourth and third centuries have been excavated, the collections of Thasian stamps cover significant time periods, in which all, or almost all, annual officials are attested on the preserved stamps. At Histria for example, from the beginning of chronological group F1 to the end of group VIII, a period of roughly 75 years, there are only two years without Thasian stamps.⁵ A similar situation occurs at Callatis: for an eighty year period (between groups I and XI), only five annual officials are missing.⁶ In Athens, with small gaps here and there, the Thasian stamps cover a period of more than two centuries.⁷ Because we are dealing with small annual amounts, there is a strong possibility that future discoveries of stamped amphoras will provide the names of missing officials. One should also consider the possibility that some amphoras were sold not in the year during which they were manufactured, but at a later date. Yet this would not change the overall impression of remarkably steady commercial relations.

The regularity with which Thasian amphoras were supplied over long periods to distant places confirms that there were communities that recognized and requested the commodities contained in them. This reveals another way one can speak of a market for Thasian wine, namely, in the sense of a demand for a particular commodity. With the present state of knowledge any attempt to quantify this demand, or the absolute volumes of the supplies, would be widely off the mark. But quantification is not really necessary to reach a significant conclusion: the existence of a continuous and regular supply by itself implies that demand was high and constant enough to justify the costs and risks of long-distance shipments.

TRADE DYNAMICS

The type of quantitative analysis most popular in amphora studies is the calculation of relative temporal changes in the volume of trade based on the quantity of amphora stamps in given time periods.⁸ Several scholars have already applied such analyses with the aim of tracing the dynamics of Thasian imports in some cities in the Black Sea area. Avram and Poenaru-Bordea (1988) and Avram (1996: 62–84) calculated average stamps-per-year coefficients for different time periods, and compared their absolute variations, their variations in relation to the average coefficient for the entire period, and the fluctuations for each period in comparison with the previous one. Choosing a different method, Conovici (2005) calculated the percentages of stamped fragments in each period from the total number of stamps in the given city, thus showing the temporal distribution of imports in the city. Unlike Avram and Poenaru-Bordea, Conovici used time frames with an even length required by the nature of his method. He also compared the results for Thasos with those for Sinope and Rhodes calculated in the same way.

Both these approaches presented can give an idea of the dynamics of Thasian imports at particular sites, and hence are useful in studies of local economies. However, such methods can tell us little about the trade in Thasian amphoras in general. Moreover, the results obtained from them suffer from significant biases due to three frequently mentioned complications: the variable volumes of the amphoras, the variable stamping ratio, and the unsettled chronology of the stamps. The following paragraphs offer a review of these problems, as posed specifically in the case of Thasos, as well as some solutions.

Amphora Volumes

Like other classes of Greek transport amphoras, those produced on Thasos come in various volumes. Few measurements have been made so far, but the available data make it clear that different volume-fractions existed simultaneously, and standards changed over time (Monakhov 2003: 76). Stamps did not differ for the different fractions, meaning that two handles bearing the same stamp may, for example, come from a 7-litre jar and a 15-litre one. In addition, although a certain level of standardization is seen, the volumes within the same fractions sometimes varied significantly. Thus comparing small samples of stamped fragments may lead to considerable biases in terms of quantities of products.

However, most statistical analyses operate with large assemblages, where the differences are merged into similar average volumes. In this respect, amphoras are comparable to boxes of nuts sold at modern marketplaces: there are large and small boxes, and the number of nuts in each type of box is variable, but

the average number of nuts per box at two different marketplaces is similar, so counting the boxes is enough to tell which marketplace sells more nuts, and also the rough proportion of the quantities sold.

Three conditions should be observed when applying this rule. The first is to restrict the comparison within containers of the same producer, since different producers use different volumes and systems of fractions. The second one is to keep the samples compared within a short timeframe, in order to avoid discrepancies resulting from changes in standards. In this sense, both methods described in the beginning of this section will suffer deviations from reality, since the average container's volume changed over the time. The last condition is to exclude preference toward smaller or larger containers for particular markets, or export destinations. So far such preferences have not been detected in the case of Thasian amphoras, but they are difficult to establish archaeologically, and also difficult to exclude *a priori*, since there is a certain logic in using larger containers in long-distance trade, as a rational method for reducing the tare on costly transportation.

Frequency of Stamping

Only some of the Thasian amphoras are stamped. No convincing explanation for this phenomenon has been offered so far, and there is no formula by which we can calculate the percentage of stamped production at any given time. The hope that 'gradually we would acquire corrective coefficients' (Garlan 1983: 29) has turned out to be overoptimistic. The problem is further complicated by the fact that this percentage varied across different amphora workshops on the island (cf. Garlan 1986a: 230–1; Garlan 1993: 157; Garlan 2004–5: 302), and also changed over time, meaning that five stamped handles in 350 BCE do not necessarily represent the same number of containers as five stamped handles dated twenty years later. The temporal variability of stamping frequency creates the greatest uncertainty when attempting to reconstruct the dynamics of imports in specific cities. The charts in Avram (1996) and Conovici (2005) not only reflect the dynamics of the import, but also the variation in stamping frequency. The problem becomes more complex when comparing such charts for different producers, since this method produces compound deviations: each class of amphora with its own capacities, frequency of stamping, and chronological problems.

It is impossible to avoid the distortions resulting from the changing frequency of stamping, but it is possible to reduce them to insignificant levels by changing both the goal and the method. Instead of measuring temporal changes in the quantities of stamps at a particular place, in which case the stamping frequency problem seems unavoidable, one can compare the quantities from different places as percentages of the total sample, divided into

short timeframes. Thus, changes in percentages over time will reveal how sales were allocated to different places, reducing the distortions both from irregular stamping and variations in the volume. For example, 100 Thasian stamps of the period from 350 to 330 BCE in Athens should correspond to a similar number of jars with a similar average volume as 100 Thasian stamps of the same period in Alexandria, and elsewhere. The shorter the period and larger the sample, the more precise the result is. However, shortening the timeframes too much brings another problem, related to the unsettled chronology.

Chronology

With very few exceptions all Thasian stamps bear a name or a device of an annual official. The dates of most of these officials are not historically fixed, but are determined through calculation, and are therefore still tentative (Avram 1996: 22–32, reviewed in Debidour 1998; Garland 2004–5: 315–27; Tzochov 2009; Debidour 2011; Tzochov forthcoming). Many problems remain with the present chronological sequence, which is built on two assumptions: that the term of the officials lasted one year, and that the names of all officials are known. Yet, the list of the Thasian eponyms is certainly incomplete. Many of the last fifty to sixty eponyms in the sequence are known by either a single or only a few stamps, making it very likely that new names will appear in the future, which will compel a re-adjustment of the dates. Roof tiles, which were marked with the same stamping system, give at least ten eponyms not attested so far on amphora handles – at some point, these names must be integrated into the list.⁹ These gaps, however, mostly concern the period after the beginning of the second century BCE, which is not considered in this paper.

The distinction between homonymous officials poses a far more serious problem. Men with the same name held the office quite often; depending on the approach, the number of these individuals in the list could shrink or expand significantly. So far the prevalent practice has been to assume a single annual term for stamps bearing the same name when there is no explicit evidence that they were different persons. Hence the number of officials is expected to grow as new evidence comes to light, a trend that will affect mostly the period after the mid-third century BCE.

Another problematic area in the chronology is the artificial separation of old-style (two names) and new-style (one name) stamps. After the new-style stamps from the term of Κλεῖτος have been re-dated to the mid-fourth century (Debidour 1999b; Tzochov 2009: 56–60), there is a good chance that other officials of chronological group I will be dated earlier.

All these problems do not prevent scholars from interpreting stamp data. The precision of the chronology will be sufficient if we lower the criteria and aim only at general conclusions. In order to minimize the effect of potential

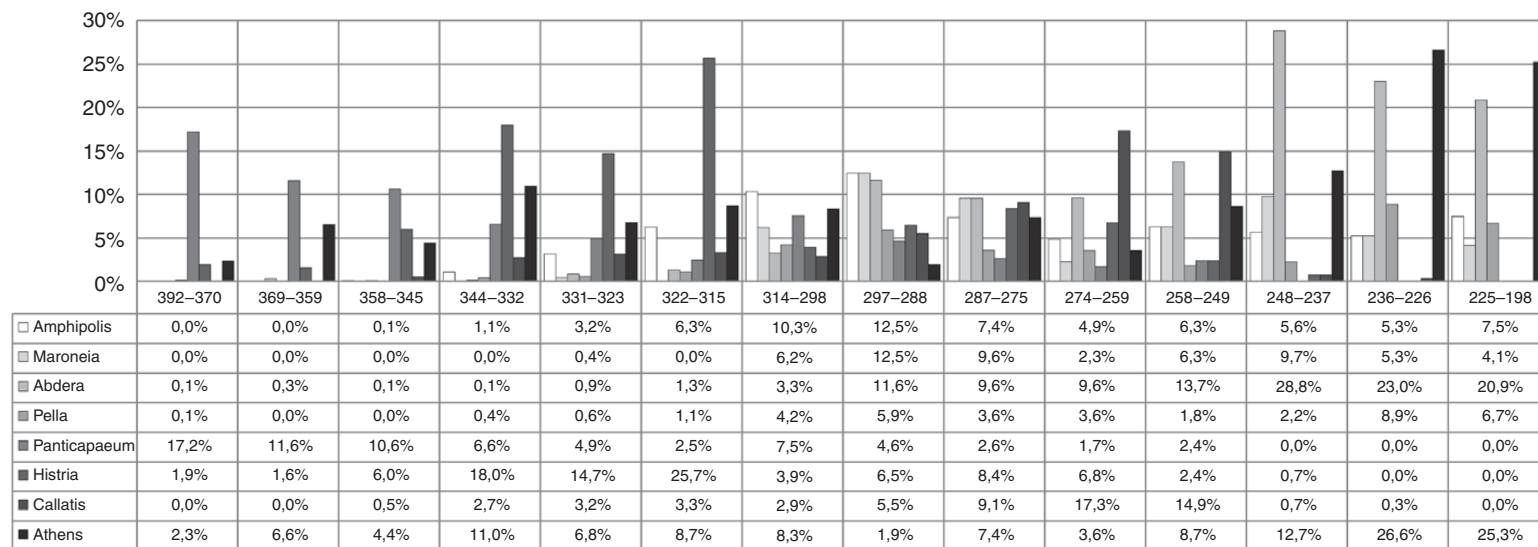
mistakes in the following charts, I have averaged the data in timeframes of ca. 10–20 years, which in most cases represent two united chronological groups. The chronology used in the present paper represents a combination of the scheme in Garlan 1999a for the so-called old-style stamps, Garlan 2004–5 for the new-style stamps, and the corrections suggested in Tzochev 2009. The publication schedule does not allow me to incorporate here my forthcoming revision of the Thasian amphora stamps chronology (Tzochev forthcoming), which will introduce certain corrections in the present charts, but this will hardly alter the main conclusions.

Sales Allocation Graphs

The sales allocation charts (Figures 10.2–10.3) have been compiled using the methods described above. They offer an alternative to the methodologies discussed at the beginning of the section, being more suitable for general studies of the trade in Thasian amphoras. As the name suggests, this type of chart gives percentages of the total sales as allocated to different markets. The total sales represent the entire sample of Thasian stamps, except the workshop finds (some 9,200 stamps), which were discarded as production waste and were never sent to markets. The exports to a given site or region, divided into timeframes, represent the percentage of the stamps recorded in this site/region from the total of stamps for each timeframe. Thus changes of the percentages over time indicate how the amphoras were distributed to different places.

Some comments are necessary. First, the charts are based on proxy data for production and distribution, and they provide only estimates for trends and proportions; their accuracy depends on factors such as sample size and chronological precision, which, at present are sufficient only for general conclusions. Second, the term ‘sales’ may raise objections in the sense that not all amphoras were objects of sale. Certainly, non-commercial distribution did exist (e.g., plunder, gift, moving of private property), but I consider stamps resulting from such distribution to be a small part of the whole when divided among all samples.¹⁰ They do not therefore significantly affect the proportion of the traded amphoras. The same should be valid for the reuse of amphoras as commercial containers in international trade, a practice that undoubtedly existed,¹¹ but is not expected to alter the results, unless one can prove that certain places regularly re-filled and re-exported Thasian amphoras.

One can construct sales allocation charts for particular cities or for entire regions. Figure 10.2 illustrates the first case, using the data from some of the biggest cities/importers of Thasian amphoras. According to the chart, in the first half of the fourth century Panticapaeum on the northern Black Sea coast was a major market for Thasian exports. In the second half of the century Histria on the western Pontic coast took over this role. A trend toward



10.2 Allocation of Thasian Amphora exports in the Aegean and Black seas (C. Tzoché).

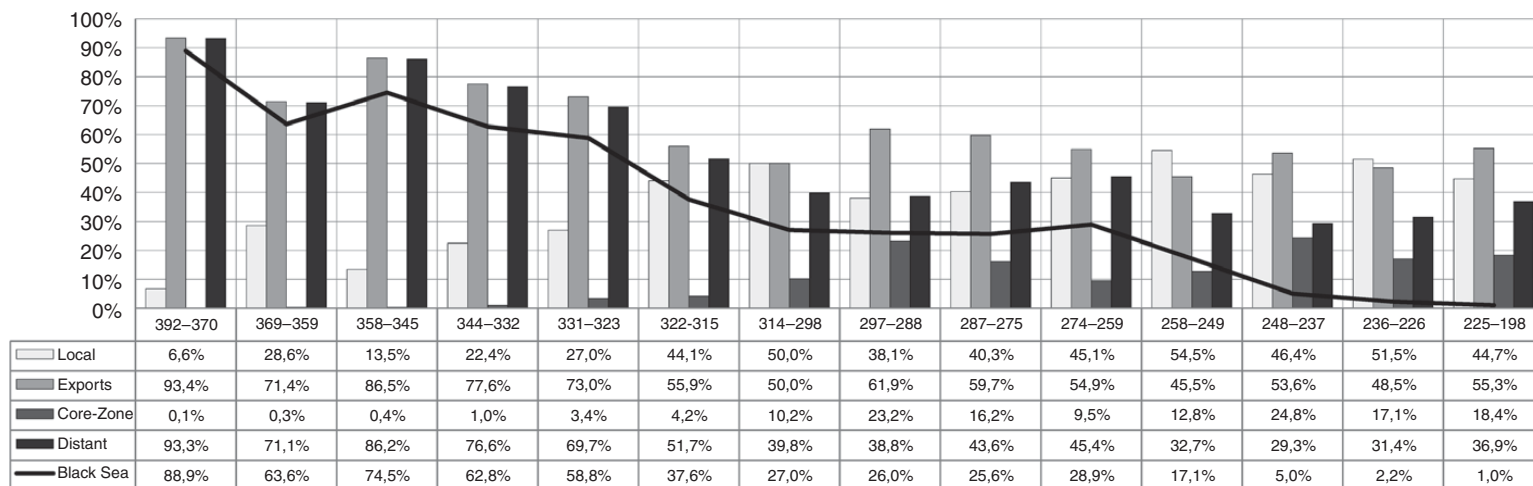
diversification of the export destinations and increasing the significance of the close-distance markets is clearly notable from the late fourth century on. For the next ca. forty years the exports were well balanced, and all markets shown on the chart participated. In the second quarter of the third century the share going to Callatis became significant, followed by the one to Abdera. After the middle of the century the Black Sea markets played a negligible role with most of the amphoras going to Athens and the cities closest to Thasos. It is important to note that neither an increase nor a decrease in the proportion of a particular market on the chart necessarily corresponds to a concomitant change in sales to this market. The high numbers for Athens in the late third century, for example, reflect not only the growth in Athenian sales, but also the disappearance of other major markets in a period of general decay for Thasian exports.

Figure 10.3 is an example of a sales allocation chart on a regional level. It compares data from four regions: (1) the local sales, represented by the stamps found on Thasos, excluding those collected at ceramic workshops; (2) the core-zone of Thasian exports, represented by the finds from Amphipolis, Abdera, Maroneia, and Mesembria-Zone – four major cities close to Thasos, which yielded sizable collections of Thasian stamps; (3) the distant markets, represented by the finds outside the island and its core-zone; (4) the finds in the Black Sea periphery.

Several general conclusions follow from this graph. The Thasians clearly made much more wine than they needed for their own consumption, even if we allow that part of the locally consumed wine was never placed in amphoras. Furthermore, the export of this surplus was not due to unintended over-production. On the contrary, the island regularly exported significant portions of its wine produce – a practice lasting for more than two centuries. The most striking result, however, is that during the first three quarters of the fourth century local consumption is much lower than exports, which were almost entirely allocated to long-distance markets.

THE DYNAMICS OF PRODUCTION

In the few studies of the dynamics of amphora and wine production, the latter has been sought as a reverberation of the sales dynamics. Both Finkielsztein (1999: 23–4) and Lund (1999: 202) have suggested that the dynamics of Rhodian amphora production follow trends similar to those of sales on the island of Rhodes. This hypothesis is hard to verify, but the great differences between the dynamics of the local sales and the exports of Thasian amphoras make it unlikely that Thasian production followed similar logic. Theoretically, this approach would be valid, if the scale of production is the only factor in



10.3 Regions importing Thasian Amphoras (C. Tzochev).

the relationship between producers and local markets. I will argue that this was not the case, especially for large-scale exporters such as Thasos and Rhodes.

Another way to deduce the general trend of production dynamics is to build a chart based on a very large sample of stamps collected from various sites. Because ‘very large’ is a relative concept, it is easier to embrace the principle ‘the larger, the better,’ meaning all stamps of a given producer known to the researcher. Lund (2011: 284–9) has put this into practice for Rhodes, assuming that the number of stamps of a given eponym in a very large sample reflects the relative volume of production in that given year. At first glance this method should be even more suitable for Thasos owing to the comprehensive publication of Thasian stamps: the largest sample we could use here gives an average of nearly 100 stamps per year for a period of two centuries, against the thirty-eight stamps per year on a 160-year basis in the sample used by Lund for Rhodes. However, this does not mean that the results for Thasos will be more accurate. In fact, they will be unpredictably biased because this method brings the problem of the variable stamping ratio through the back door. Garlan (1999a: 36, figure 7) already plotted such a graph for the first sixty years of Thasian stamping, but noted the problem, and refrained from interpretation.

There is also a third solution, which is not based on the quantitative indices of the stamps (although it is to some point still dependent on them) and is affected neither by the stamping ratio, nor by commercial practices. This method needs a broader introduction with regards to the organization of Thasian amphora production.

Apart from the name of the annual official, the Thasian stamps bear a device and/or the name of a person related to the production of the amphora. Such information is always present. However, the role of this person, who is named as the *κεραμάρχης* on some stamps and called the ‘fabricant’ in specialized studies, remains debatable. None of the existing opinions on this matter completely accounts for all the evidence. Grace allowed that the fabricants could be potters, workshop owners, commissioners, or inspectors, but in all cases “their endorsement indicates responsibility for the standard quality of the jars” (Grace 1956: 126; see also Grace 1949: 177. For an earlier view of the fabricant as a potter or a pottery owner, see Shkorpil 1914: 137–9). Garlan (1986b: 12) has argued that the most appropriate translation of the term *κεραμάρχης* is chief-potter. He took this argument further, suggesting that the fabricants are workshop owners, or rather owners of the wine-producing estate to which the workshop was attached (Garlan 1983: 34) – a theory supported by the stamps collected at the workshop of Kalonero, where two fabricants (*Ἀρισταγόρης* and *Δημόλκης*) appear on stamps over a long period. These fabricants were attractively identified as members of a noble family, mentioned in inscriptions for holding high civic offices (Garlan 1983: 34; Garlan 1986a: 273–4).

None of the other excavated Thasian workshops, however, confirmed the case of Kalonero; quite the opposite, the Keramidi workshop yielded a large number of fabricants' names over a short period of time, some of them even attested with the same annual official (Garlan 1999a: 51). Indeed, it is the existence of multiple fabricants per year in a single production site that undermines the theory of the fabricant as a workshop owner. This phenomenon appears too often to be considered an exception, and can be observed in different workshops. In most cases when there are multiple fabricants per year at a given site, one of the fabricants is represented with many stamps, while the rest count a few handles. Hence, the dominating fabricant has been considered local, and the stamps with other fabricants have been explained as imports from elsewhere, intrusions resulting from consumption at the place of production (Garlan 1986a: 263; Garlan 2004–5: 284, 304). Some of these 'intrusive' fabricants clearly belong to other workshops, where their stamps are attested in great numbers, but there are also controversial cases in which the same stamp is well presented in two workshops, or multiple fabricants are well attested in a single workshop during the term of the same official (Garlan 1986a: 264). These could be explained with a change of the fabricant as head of the workshop in the course of the year (Garlan 2004–5: 284). A better solution is to suppose that the fabricants were not workshop owners, or at least not in all cases. The 'intrusive' stamps indicate that fabricants changed workshops and/or several fabricants operated simultaneously in one workshop during the term of a single official.¹²

The fabricant-*κεραμάρχης* could therefore be considered a person responsible for a single production group, be it as a manager, supervisor, or master-potter. In such case, several production groups could have shared the same workshop (or specific facilities at the same production site) or moved from workshop to workshop as lessees. One way to reconcile the contradictory evidence is to assume that not all workshops were organized in the same way: that some of them formed parts of wine production estates, while others were leased to independent entrepreneurs (Garlan 1999a: 382). The case of the Arretine sigillata industry presented by Fülle (1997) provides an idea of how such various types of production groups might have coexisted.

Let us now return to the methodology of estimating production dynamics. The number of production groups (fabricants) attested with a given annual official reflects the amount of labor engaged in amphora production for that year. Thus, the change of this number over time will reflect the dynamics of production – roughly, not strictly, since the size of the production groups varied, and some potters were more productive than others. Still, a change in the number of fabricants should reflect a higher/lower demand for containers, corresponding to changing crop expectations. If this change is not restricted

to particular years but is a consistent trend, it should indicate either the growth or the reduction of wine production (Figure 10.4).¹³ As in the case of the charts of sales allocation, instead of showing the indices for each year, this trend line is based on data grouped in a series of timeframes in order to show only the general trend, and to reduce the discrepancies resulting from under- and over-represented years and chronological problems.¹⁴ Still, neither the method nor the chronology is precise enough to take into account detailed changes in the line. For example, the small peak in the 230s is most probably due to a chronological problem with the six eponyms of the so-called ivy-leaf group, which in my opinion should be dated some 10–15 years earlier.

Despite all these difficulties, the general trends seen on the chart should be valid: a relatively low volume of production during the first three quarters of the fourth century, a consistent growth in the last third, a peak during the last decade of the fourth and the first quarter of the third century, followed by decline, particularly noticeable after the middle of the third century. If we combine this information with that from the sales allocation charts, it turns out that the low levels of production correspond to a dominance in sales to distant markets, a growth in production corresponds to a diversification of and balance in the sales between long- and short-distance markets, and a decline in production corresponds to a growing share of the core-zone markets.

While it is impossible to quantify production in absolute figures, it is possible to conclude that the Thasian wine/amphora industry experienced sustained growth for about a half century. If the figures are correct, during this period the labor engaged in amphora production roughly tripled, which suggests a similar or larger growth in the aggregate output of containers.¹⁵ Such growth indicates a period of high demand and stable foreign markets, which stimulated investment in expansion of the vineyards, new wine-making facilities, and amphora workshops.

AN EXPORT-ORIENTED INDUSTRY

Many modern studies view amphora exports as a way of distributing surplus production. The very concept of a surplus (i.e., produce in excess) implies producers who aim at satisfying their own needs, and release products for sale only when the crop exceeds what is needed for their own consumption. Such a strategy would have been the rational choice for many small-scale producers,¹⁶ but it cannot be applied to amphora trade in Ancient Greece in general. Market-oriented industries did exist, and some of them were clearly oriented toward distant markets. The case of Thasos is a good, although certainly not a unique example. One may reasonably argue that Hellenistic Rhodes and Cnidos eventually would show an even higher priority put on their amphora

exports compared to local consumption. So would probably Chios, Corinth, and Mende during the Classical period if their amphoras were regularly stamped. The distribution patterns of the amphoras from these, and from many other Greek city-states suggest the existence of micro-economies, whose output regularly exceeded the local demand, meaning that they aimed at foreign markets, and managed their output according to the demand created by these markets. If we call this market-oriented output a ‘surplus,’ it would be appropriate to differentiate it from the surplus that was simply a produce in excess of the producer’s local needs. Even if in both cases the term is technically correct, the two types of surpluses imply different underlying strategies and modes of production: as Unwin (1991: 11) put it in the case of wine, ‘a subsistence polyculture economy, where vines have been cultivated and wine made as one part of a household’s wider domestic economy,’ and ‘a market oriented monoculture of vines producing wine for an external demand.’ While the clear distinction between these two modes of production in the ancient Mediterranean remains controversial (Horden and Purcell 2000: 215–16), the evidence for Thasos suggests that part of the massive surplus exported in amphoras was generated by large-scale domains specialized in winemaking (Salviat 1986: 150–1).

It is remarkable that wine assumes such a prominent position among the export-oriented industries in Ancient Greece. This is not only a consequence of the disproportionate amount of amphora evidence. Wine was a staple, and constantly in demand; but it is the spread of sympotic culture that turned particular wines into luxury commodities and vastly increased the demand for them. Furthermore, the fact that wine can be stored facilitated the market-oriented mode of production. When packed in amphoras, wine has a margin of several years in which to enter the market, thus providing producers the flexibility to withhold or place their goods on the market according to fluctuations in demands and prices or to reduce the consequences of poor harvests. Since vintage wines were appreciated in antiquity (Salviat 1986: 178–9; Brock and Wirtjes 2000), storing wine could also be regarded not only as a way of hoarding wealth and as risk-avoiding behavior, but also as form of profit-oriented investment (Unwin 1991: 13–14).

THE RELATIONSHIP BETWEEN PRODUCTION AND MARKETS

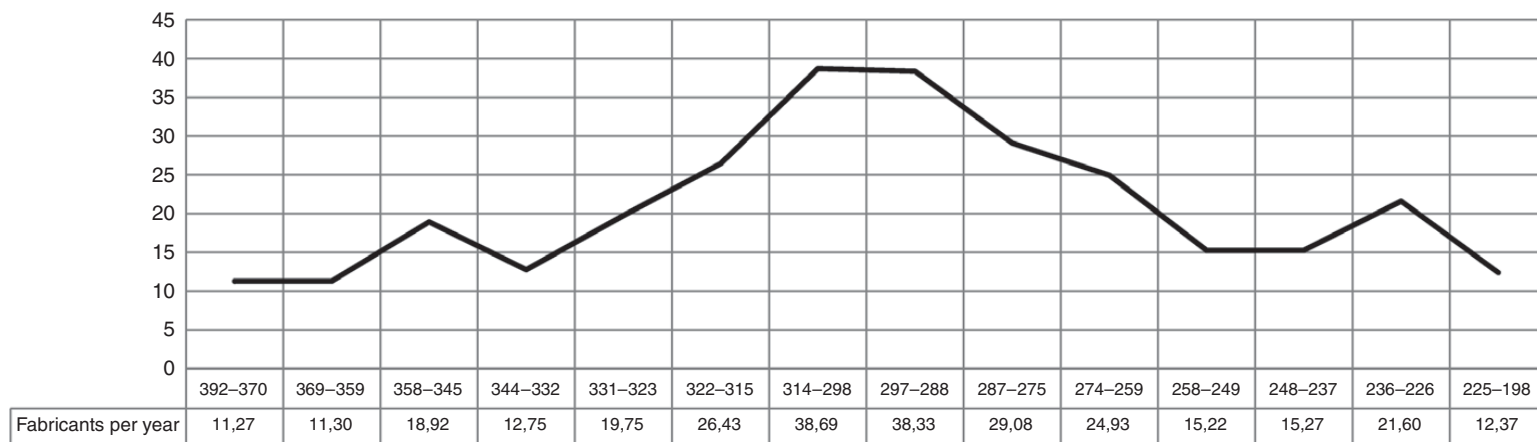
To explain some patterns of amphora distribution in the Aegean, Mark Lawall introduced the idea of a ‘core-zone relationship’ – a theoretical model of relationship between producer and importer in which ‘the importer’s access to the exporter’s products depends primarily on changes in the volume of production’ (Lawall 2005: 202). The model received its name from the assumption that it applies to trade between cities in geographical proximity, where

transportation is not a significant factor. In its essence, Lawall's theory has a common ground with the previously discussed idea that the dynamics of local consumption closely reflect the dynamics of production. A quick look at the charts (Figures 10.2–4) presented here is enough to see that they fail to fit both these theories. The estimated dynamics of Thasian production do not match those for local sales, nor for sales in the largest markets; to a certain point (particularly after the mid-third century) it follows a logic different from sales in the core-zone. Are the data biased and the graphs too far distant from reality? It is possible, but I would like to offer a rational, market-based explanation as well.

The reason why the theoretical expectations do not corroborate the results obtained for Thasos may be the theory itself. Volume of production is only one factor affecting sales. In the case of a small-scale producer selling most of his output in a limited area, the evidence from this area will be representative for the production. However, for a large-scale producer with access to multiple markets, other factors, such as demand and prices, could play significant roles, including influencing his behavior at the local market.

The prices of Thasian wine were presumably higher in distant markets than at home or in the core-zone. A large-scale merchant engaged in long-distance ventures could offer a higher price for the wine, and buy a larger number of amphoras at once, than the small-scale trader operating within the core-zone. Thus the former would be the rational choice for a producer, or a local middleman, who wanted to sell his merchandise better. If the producers had such profit-maximizing behavior, then in a period of low production and high demand, the logical outcome would be exactly what the charts show for the first three quarters of the fourth century: the amphoras would tend to go to distant markets.

Let us accept the view that ancient producers and traders acted with a profit-directed rationality. High income from distant markets during the fourth century stimulated production growth (Figure 10.4), which increased the supply, and eventually caused a fall in the prices offered for the wine at distant markets. As a result, some of the less-profitable markets in the core-zone and those on the island became attractive, and part of the supply was allocated to them. This is exactly what the charts in Figures 10.3 and 10.4 show for the late fourth century and the first quarter of the third century BCE: diversification of the markets, and higher participation for the core-zone and local sales. If we continue to interpret the charts with the same logic, the following drop in production coupled with a growth in core-zone sales should be a symptom of problems at major long-distance markets. This is already a fact: at that time the Black Sea market dropped, a phenomenon, which, because of its significance, will be discussed at length.



10.4 An estimate of production dynamics for Thasian Amphoras based on the number of fabricants attested on stamps (C. Tzoché).

THE LOSS OF THE BLACK SEA MARKETS AND THE END OF AN INDUSTRY

Around the middle of the third century BCE, Thasian amphora imports in the Black Sea dropped, and in the following decade came to a halt. This phenomenon is well known among specialists and noted in many publications (Lazarov 1980: 183; Avram and Poenaru-Bordea 1988: 28 and note 12; Avram 1996: 50; Debidour 1999a: 293; Garlan 1999b: 138; Monakhov 1999: 530, 532), without, however, being discussed in detail. Explanations suggested so far include a decline in Thasian production and local problems for the cities in the area (Avram 1996: 50).

It is true that a trend toward reduction in the number of fabricants was already noticeable before the 250s, but their average number was still higher than during the first three quarters of the previous century, when the Black Sea was the most active market. As explained earlier in this chapter, a lower level of production should be expected to raise the importance of long-distance markets, and not the opposite. But the strongest argument against the idea that decreasing production impeded the exports is the fact that the latter continued elsewhere in the eastern Mediterranean. Thus, a decline in Thasian production is a very unlikely reason for (but a likely consequence of) the loss of the Black Sea markets.

There are number of conditions outside Thasos that could have caused this phenomenon. The latter half of the third century brought political and economic difficulties to many settlements in the area. Among the affected were some of the major importers of Thasian amphoras, such as Olbia, Histria, and the cities of the Cimmerian Bosphorus, which suffered territorial raids and destruction (Maslennikov 2003: 1168–9; Saprykin 2006: 276; Kryzhytskyy and Krapivina 2003: 518–19; Krapivina 2005: 249; Gavrilyuk and Krapivina 2007: 568; Avram 2003: 314; 2006: 66), as well as Callatis, which had difficulties recovering from the war with Byzantium (Memnon, fr. 21 [*FGrHist*, III, B, 434, fr. 13]).¹⁷ Economic decay, impoverishment of the local population and a decline in sympotic culture may have lowered the demand for expensive imported wines. However, a crisis is not evident everywhere in the Pontic area; cities such as Mesambria, Odessos (Minchev 2003: 226), and Tomis (Buzoianu and Bărbulescu 2007: 295, 297) on the west coast were flourishing during the late Hellenistic period. In addition, no disruption of the amphora trade in the Black Sea occurred, even in those cities that experienced difficulties. Whatever the problem was, it appears to have affected Thasian imports in particular, and, possibly, those of other northern Aegean producers, but not the demand for imported wines in general. Taking this into account, a decline in the demand for Thasian wine as a result of market competition from other more successful wines is also possible.

Besides the direct consequences for the demand for Thasian wine, the crises in the north–northwest Pontus could have severed chains in the production and trade of other commodities, especially cereals, which may have then affected the wine trade. The idea that the importation of Thasian amphoras into the Black Sea was related to the commerce in grain is more than just a banality based on scarce written information (as stated in Garlan 1999a: 92).¹⁸ It is hardly a coincidence that the Bosporan Kingdom and present Dobrudja are both the areas of the highest concentrations of Thasian amphora finds, and the main source of cereals in the region. These are also the areas where rural territories were devastated in the mid-third century BCE. When a number of major markets in these areas ceased to supply a key commodity demanded by the Aegean, long-distance shipments supplying Thasian amphoras could have become unprofitable (on the balance of exports and imports, see Bresson, [Chapter 2](#) in this volume).

Conditions outside the Black Sea also contributed to the decline. A change in the routes of the large-scale trade in the Aegean is a likely reason for the change in the provenance of the amphora imports in the Black Sea in the long term. The amphora assemblages from the latter half of the third century, besides the local Pontic jars, are composed mainly of southeast Aegean amphoras – Rhodian, Cnidian, and Coan – while those from the north Aegean are missing. This was a very gradual change, the first signs of which are visible already in the late fourth century.¹⁹ Thasos was situated on one of the principal routes between Central Greece and the Black Sea, which is also true for a number of other north Aegean wine producing centres such as Acanthus, Mende, and Peparethos, whose amphoras were quite popular in the Pontic region during the Classical period. The traffic along the way to the straits provided a regular outlet for the production of these cities. Their disappearance from the Black Sea markets is symptomatic of a decline in the North Aegean trade route. The change could be related to the decline of Athens as commercial hub and provider of credit for maritime ventures coupled with Rhodes coming to prominence as a regional centre for the re-export trade.²⁰ When Rhodian ports became a primary destination for merchants operating in the Black Sea, the main route of this trade would have moved along the coasts of Asia Minor, thus affecting the spectrum of amphora imports to the Black Sea.

None of these factors taken in isolation provides a perfect explanation for the change in the Black Sea markets. The combined effect of all these factors may have caused the change. In similar fashion, multiple factors may be responsible for the subsequent decline of wine and amphora production on Thasos, among which the loss of the Black Sea markets takes a central place. During the latter half of the third century the production of containers decreased significantly, which is seen not only in the reduced number of fabricants (stamp types), but also archaeologically: while in the beginning of the third century all of the seven explored amphora workshops were active, in the last quarter of the

century only two of them still functioned (Garlan 2004–5). Although Thasian exports continued, a recovery did not follow: the end of the industry came later in the second century, when both the exploitation of the agricultural sites on the island and the practice of stamping amphoras gradually came to an end (Brunet 2004: 85). This was a logical reaction to the loss of the most important long-distance markets that in the past ensured Thasian wine producers a steady demand for their product and a profitable enterprise.

CONCLUSION

For at least two centuries the island of Thasos regularly produced wine destined for foreign markets, some at significant distances. It is still impossible to quantify the absolute scale of this industry, but with the improvements in the methodology suggested here it is possible to get a general idea about its dynamics, and the allocation of sales to different markets. The results thus obtained make good sense when explained with rational, profit-driven economic behavior, and markets ruled by supply and demand. They also prompt interdependencies between markets, even if not a part of the notorious ‘enormous conglomeration,’ whose inexistence in antiquity has been a central argument for downplaying the role of market mechanisms (Finley 1973: 22–3). The present knowledge and methods do not allow us to study these interdependencies as short-term reactions, but only to deduce them as trends, which span several decades. Based on such trends I have suggested that the condition of the Black Sea markets – the biggest regional outlet for Thasian amphoras – affected both the production of Thasian wine and its sales in the Aegean. At the same time, Thasian amphora exports to the Black Sea were dependent on the situation in the Aegean in terms of political events, availability of funding, trade routes, and trade in other commodities.

As stated at the beginning, this case study has taken a more optimistic approach to the evidence. But even a sceptic could hardly disagree that the potential of Thasian amphora stamps goes far beyond what can be deduced from this evidence with the current methods and knowledge. Continuing the methodological discussion, increasing the database of stamps, and improving the chronology are some ways to unlock more of this potential. More archaeological data concerning the organisation of amphora production is also required. Finally, Thasos is not an exceptional case, but only a relatively well-documented one. Many amphora exporters, some of which show comparable quantitative figures and distribution patterns, will continue to raise doubts about whether we are dealing with ‘the 2% of exceptions’ (Cartledge 1998: 14) or if production for the market and macro-economic activity in Ancient Greece were far more common than usually imagined.

NOTES

- 1 According to my present estimation this system provides evidence from the 390s to at least the 140s BCE (Tzochet forthcoming). During this entire period the two basic elements of information presented on the stamps – a dating official and a fabricant – remained unchanged, despite the variations in the layout solutions, and the shifts between textual and pictorial presentation. The significance of some additional, occasionally appearing elements still remains problematic: see Garlan 2004–5: 285–8.
- 2 The corpus of the new-style Thasian amphora stamps (a part of Debidour 1999a) has not been published officially, but became available to the public in 2010 via a copy in the library of the French School at Athens. Most of the statistical information accompanying this corpus was published in Debidour 2011.
- 3 Recently Davies (2007: 335–6) discussed some of the uses of the term market.
- 4 The statistical figures in this paper are based on data published in Garlan 1999a and Debidour 1999a, complemented with finds known to the author until 2012.
- 5 Of the officials not represented, Ἀρχέστρα(τος) and Κλεοφῶν I held full year terms, while Καλλικράτης and Ἀριστομένης are believed to have shared a year with other magistrates. The stamps of Καλλικράτης are extremely rare elsewhere.
- 6 Again, I am not taking into account the absence of Καλλικράτης and Ἀμφοτέρης, which possibly do not represent full years.
- 7 For the stamps from the American excavations in the Athenian Agora and the Pnyx hill, I use my own forthcoming study.
- 8 On the early development of this method see Kac 1992.
- 9 Because of these ten eponyms Debidour (1999a: 179–81) allows that different legislation (and separate officials) may have existed for control of roof tile production. However, many eponyms attested on tiles are the same as those on amphoras, and in many cases the same dies are used to stamp both products. Since the same official was used to date both type of products, it is more reasonable to accept that the ten eponyms in question are still not discovered on amphora handles, or had their terms in years without amphora production.
- 10 Possibly the share of non-commercial distribution will be slightly higher in the local and close-distance samples than in the long-distance ones.
- 11 For a recent review of the evidence for commercial reuse see Lawall 2011b: 30–1.
- 12 Two fabricants sharing a workshop seems the only possible explanation of the curious case of an amphora bearing two stamps with the same official's name, but different fabricant devices, published in Lungu 1994: 141, 149, no. 5.
- 13 For the period after ca. 330 these data are readily available from the table published in Debidour 2011. The data for the earlier stamps are extractable from Garlan 1999a.
- 14 This approach differs from the one of Garlan (1999a: 36, figure 8), who presented the variation in the number of fabricants for each annual official.
- 15 Apart from the amount of labor, technological improvements in the production facilities may have produced increased growth. There is no evidence from Thasos for the period in question, but growth-oriented technological improvements in oil presses from the Roman period could serve as an example (Hitchner 2002: 77–8).
- 16 The cities on Hellenistic Crete (Vogeikoff-Brogan and Apostolakou 2004; Chaniotis 2005: 98–100), or Ilion (Lawall 2002), where the locally produced amphoras circulated mainly in the same area, and imitated the shapes of long-distance imports can serve as examples.
- 17 On the possible consequences of this war for Thasian imports in Callatis, see Avram and Poenaru-Bordea 1988: 28. On the controversies around the war, see Avram 2007b: 258–67.
- 18 Seeking a link between the trade in grain and the trade in wine has been a particularly popular idea in Soviet/Russian studies, e.g., Zeest 1960: 8–21; Brashinsky 1962; Shelov 1970: 34; Brashinsky 1984: 179–80; Kuznetsov 2000: 110. See also Lawall 1995: 306–7. Garlan

(1999a: 92; 1999b: 140) cursorily criticized this line of research. Recently the subject has been taken up by Müller 2010: 249–54.

- 19 The change is very visible in the sample of amphora deposits published by Monakhov 1999 (with commentary on pp. 570–1). The emergence of Rhodes as the dominant source of amphoras for the Black Sea after the mid-third century has been noticed in many publications, e.g., Brashinsky 1984: 182; Badal'yants 1986; Conovici 2005: 107–11; and Lawall et al. 2010: 385. Berthold (2009: 51–2) connects the quantities of Rhodian amphora stamps found in the Black Sea with reciprocal grain exports.
- 20 On Rhodes taking the lead from Athens in maritime trade (especially in cereals) during the Hellenistic period, see Casson 1954: 168–72; 1984: 70–95; Berthold 2009: 52; Migeotte 2009: 132–3. On the possible impact this shift had on the Aegean amphora trade, see Lawall 2005: 215.

TRANSPORT AMPHORAS, MARKETS, AND CHANGING PRACTICES IN THE ECONOMIES OF GREECE, SIXTH TO FIRST CENTURIES BCE

Mark L. Lawall

INTRODUCTION

The pre-requisites of a market economy, according to Moses Finley (1985b: 34), are ‘extreme division of labor’ and ‘the absence of household self-sufficiency’; a major feature for the existence of an ‘economic system,’ too, is the ‘enormous conglomeration of interdependent markets’. By insisting on these defining parameters, then not finding evidence of these conditions, Finley did away with the ancient economy altogether.

Finley was offering a view of markets that conceived only of a fully developed market entirely in keeping with the constructs of formal economic theory. He thereby excluded just the historical and comparative perspectives that had been fruitfully embraced by his mentor Karl Polanyi and other members of the Columbia University seminar (Polanyi *et al.* 1957; Pearson 1977; Halperin 1994). Such an approach might have led Finley to ask: Can a market economy exist as a *not-so-enormous* conglomeration of *somewhat* interdependent markets? Can a market economy exist if households are only *somewhat* self-sufficient? And most importantly, does the place of the market in ancient society change over time? As Polanyi (and others) accepted, markets did exist in antiquity; Polanyi’s greater interest lay in how specific elements of markets (supply, demand, price) were articulated and to what extent market interests shaped and structured society (e.g., Polanyi 1957b: esp. 250–6 and 266–9; Neale 1957 distinguishing between Self

Regulating Market and Market Place). This chapter begins, therefore, with an overview of ways of thinking about markets that are conducive both to an archaeological approach and to a consideration of diachronic change as opposed to ahistorical description.

Archaeological data, much like the evidence provided by some dossiers of economic papyri and inscriptions, are particularly advantageous when seeking a diachronic view of ancient economic behaviors. Thus, following the discussion of definitions of markets, I turn to the evidence provided by transport amphoras: how they functioned in ancient transactions (as far as we can tell from the jars themselves), what can be concluded about the functioning and roles of markets from patterns of amphora distribution both as containers of trade goods and as containers for storage, and how such evidence changes over time.

Notes on Methodology

The result of this inquiry is not a single definition of market behavior that encompasses all transactions involving amphoras/amphora-borne goods. Quite the contrary: *different kinds of transactions involving amphoras likely operated within different systems*. This point should not surprise – even in the economic system of modern Canada or the United States (and I assume elsewhere too), different kinds of transactions operate under very different rules (e.g., payment of unreported cash to the teenager next door for yard work vs. payment of reported salary, taxes, benefits, and so on to the office worker).

A further point of methodology should also be clarified. In this chapter, I refer to models of economic behavior derived from studies of bazaars and other modes of marketing faced with imperfect information and to peasant interactions with markets, interactions which may be based on rationalities that contradict the expectations of formalist economics. The use of the term ‘bazaar’ in modern Classical scholarship runs the risk of characterizing the Greek *agora* as somehow exotic and ‘oriental’. Unlike Rostovtzeff’s use of the term bazaar to label the central marketplace of Dura-Europos under Parthian rule, justifiably criticized by Baird (2007: 35–7), my comparison of ancient Greek evidence to more modern ethnographic and economic research is not intended to equate the two. And, there is no intention by this process to make the ancient Greek seem more exotic, primitive, irrational or foreign – the goal is to make ancient behavior more comprehensible. Indeed, the comparative process highlights similarities of conditions and thereby raises the likelihood that some ancient behaviors might be more understandable when viewed through these other paradigms. Again, if I argue here that *some* transactions are understandable through these other models, I am not arguing that all transactions operated in the same way. Nor, as I think Bang did very successfully

(2006; 2008), am I trying to use the paradigm of the bazaar to make sense of ancient society as a whole.

MARKETS

Recent archaeological approaches to market economies define market exchange as those institutionalized transactions shaped by both social interactions and self-interested rationalities, in which the factors of supply and demand influence relative prices, quantities, and qualities of the commodities that are available (Garraty 2010: 5–8; Feinman and Garraty 2010: 170–2; Ossa 2013: 3). The effectiveness of supply and demand in shaping market behavior and influencing prices depends both on the extent to which such conditions are known to the actors and on some degree of free competition and choice. Under such conditions, then, prices themselves can become a shortcut to information about the economic qualities of products and help shape the preferences of buyers and sellers. Distributions of marketed goods over a site should depend primarily on households' purchasing abilities and far less on the social status of households (Hirth 1998). This definition separates the market as a behavioral concept from the marketplace as one possible, indeed quite effective, physical manifestation of the institutionalized nature of the market (Garraty 2010: 9–10). Each element of this conception of markets lends itself to further elaboration, illustrating the range of behaviors and range of motivations, actions, and outcomes that can all be encompassed within this definition.

Institutionalized Social Interactions

Markets are part of the broader social system, shaped by and shaping social institutions, and involving social interactions between buyers and sellers. Harvey and colleagues, in a recent volume on markets and institutions, outline a very useful model for situating markets in society without assuming the socio-economic primacy of the market (Harvey and Randles 2010; Coriat and Weinstein 2010). The starting point is the 'bargaining transaction' – any exchange based on a mutually acceptable price and acceptable conditions. How the transaction occurs, whether through reading a price tag and paying the cashier or haggling up and down or some other means, is entirely open. People come to the role of buyer or seller by any number of different paths, motivations, needs, choices, and so on. Behind the sellers are activities creating the supply; behind the buyers are activities creating demand. Within all three areas – supply, transaction, and demand – repeated actions can create, change, or even destroy supporting institutions. Such institutions may be overtly and directly economic, that is, directly contributing to the exchange of goods, or they may be indirectly related and more properly situated in the social or

political spheres of behavior. Within the area of the transaction itself, price creation mechanisms and the processes of exchange also interact with dynamic institutions.

Self-Interested Rationalities and Choices

The wants or needs of the buyers and sellers as well as the nature of the goods themselves all modify the free operation of market forces. The model just described leaves open the possibility of a wide range of motives and rationalities shaping supply, demand, and the process of transactions. While other models exclude both non-maximizing motives and limited range of choice from the market sphere, this approach – shared by many others in the fields of economic anthropology and sociology – opens the possibility for a broader spectrum of behavior to be considered. Even within a model of profit maximization, motivations can vary between actors. Prasch (1995), for example, distinguishes between the wants market (unmet demand will stay the same or decrease) and the needs market (unmet demand will intensify over time). A needs trader, for example, cannot simply withdraw from a market and wait for better conditions without increasing his/her own level of demand (hence limiting the level of choice); a wants trader's level of demand will stay the same or decrease over time, so there is full choice as to remaining in or withdrawing from a transaction or even from the market altogether (on rationality, see also North 1990: 17–26).

Such modifications to rational principles even within theoretical market systems echo the various systems of rationality employed by peasant communities as their household economies exist within broader market economies (Deere and de Janvry 1979; Fafchamps 1992; Mayer and Glave 1999; Fafchamps and Hill 2005; and in historical perspective, Kanta Ray 1988; Haynes 1999; Lanaro 2003). For example, subsistence production among Sudanese peasants, using unpaid family labor and proceeding regardless of market prices or potential profits that could be gained from crop sales, coexists – rationally and necessarily – with participation in the off-farm labor market, cash-crop production, and even purchases on the food market (Bernal 1994). The household's seeming autonomy, perhaps even self-sufficiency, in terms of subsistence crop production is in fact heavily influenced by the coexistence of labor and commodity markets as well as the economic policies of the state. A similar coexistence of non-market agricultural production for the household and production for market sales figures prominently in studies of the rise of markets in eighteenth and nineteenth century America, which happens also to provide an example where, as in antiquity, the stated ideology of autarky existed in a dynamic relationship with the development of markets (Rothenberg 1981; Hobbs Pruitt 1984; Attack and Bateman 1984; Ford 1985; likewise Jones 1993 on

similar coexistence in Anglo-Saxon England). Indeed, Gregory argues: ‘Thus, “householding” as a principle of economic behavior may straddle both the market and nonmarket domains’ (2009: 144).

Supply – Demand – Price/Transaction

The definition of market exchange offered earlier emphasized the importance of, the ‘visibility of’, supply and demand in determining price. With the range of institutions potentially shaping both the supply side and the demand side of any transaction, this ‘visibility’ becomes a problematic variable in itself. In other words, the extent and nature of knowledge surrounding the transaction helps to shape the process.

At one end of the scale between knowledge and ignorance is the standardized goods market with advertised prices and carefully packaged, labeled and ‘branded’ goods for sale (Fanselow 1990; on the development of such markets, see Carrier 1994; Styles 2000; and on the importance of brands as shortcuts to information, Grassl 1999; Harvard Law Review 2003).

At the opposite end of the spectrum, problematic consumer knowledge is perhaps most apparent in studies of street markets, bazaars, garage sales, and the like (i.e., markets in non-standardized goods). Fanselow (1990), shifting the focus from Geertz’s emphasis on the chaos of the bazaar (1978; 1979), describes such markets in terms of systemic behavior reducing risk and transaction costs. Consumer knowledge is minimal and inaccurate, as there is little informative packaging as to quality or origins of the product. Prices from merchant to merchant cannot vary much without risk of being accused of price gouging, so merchants mix good and bad quality goods to achieve some level of profit. Consumers make frequent small purchases to reduce risk, and they try to deal only with familiar merchants with whom they have had good luck in the past. A parallel line of inquiry emphasizes the importance of social relationships among competitive sellers (Varman and Costa 2009). Of course, the features of the bazaar enumerated by Fanselow depend on the specific structures of the markets being studied (cf. Rotblat 1972), but Fanselow’s presentation does provide a model for comparative purposes (e.g., Paulas 2010).

Other researchers have elaborated on the nature of price fluctuation and price dispersion in different market contexts (Obst 1971; Alexander and Alexander 1991). Significant variables shaping prices paid for goods include the flexibility of the process through which prices are set and advertised (modern grocery store chains being least nimble, small corner shops being more so, street markets or bazaars being most flexible; see Caglayan, Filiztekin, and Rauh 2008), the nature of consumer knowledge of prices and how that knowledge feeds back into the price creation system (e.g., the active role of ‘first buyers’ in setting prices in Chinese fish markets; see Wang 1999), the

relative frequency of purchases, and the nature of the goods involved (e.g., perishable products as opposed to those with unlimited ‘shelf life’). Exchanges in theoretically ‘imperfect’ markets can also be facilitated by holding certain variables related to a product – such as demand or price – constant and thus limiting the scope of uncertainty. For example, trade in Anglo-Saxon England focused on goods with ‘inelastic demand, that were able to bear the costs and yield profits commensurate with the risks borne ... slaves, wine, quality textiles, furs, and potter’ (Jones 1993: 663).

Markets and Social Networks

Social networks have come to be seen as a strategy for reducing transaction costs and hence link markets and price formation with social relations (Granovetter 1983; 2005; Clark 1991; Podolny 1994; DiMaggio and Louch 1998; Zafirovski 2000; Goyal 2005; Hancock 2005, and many others). Considerable work has been done in identifying the roles of such ties in modern economies as well as the economic impact of networks on market exchange. While such networks can impede free competition and choice (e.g., Gutelius 2002), in practical terms the success of market systems depends heavily on them (most recently, now entering the mainstream media, Ormerod 2012).

The presence of connected actors as opposed to isolated, self-interested individuals as well as the various contradictions and complications to the theoretical paradigm of the free market just surveyed, however, do not necessarily exclude such behaviors from the economic realm or even from being considered under the rubric of the market economy. Likewise the coexistence of other systems of allocations of resources, such as reciprocity, redistribution, or householding does not exclude discussion of concurrent and coexisting market systems (as noted earlier in this chapter with reference to Polanyi’s approach). Indeed, it is precisely the potential for sliding between and merging diverse systems of allocation that might form significant elements of change in a particular historical economic system (Polanyi 1957b: esp. 255–6); Gudeman (2009: 18) emphasizes the dynamic interaction between ‘mutuality and market, or community and impersonal trade’.

Archaeology of Markets

In sum, markets are defined here as institutionalized exchanges based on bargaining transactions, with supply shaped both by sellers’ needs and interests and by the nature of the products involved, and demand shaped by the buyers’ needs, interests, and awareness of the qualities of the goods on offer. This definition does not pre-suppose a particular set of behaviors for the market, nor does it require that all allocations and accumulation of resources be

achieved through such exchanges. Hence, a hope of self-sufficiency as based on some portion of livelihood being achieved without recourse to the market can coexist with participation in market exchanges on a regular and rational basis.

An archaeological approach to this view of markets, therefore, requires archaeological data related to supply, transactions, and demand, and an exploration of how these three elements intersect. In terms of the supply to markets, one can consider evidence for surplus production and storage facilities. Choice might also be attested where imports are attested in areas where roughly the same products are available locally (hence imports have been chosen as desirable). The processes of transactions can be explored foremost here through the nature of packaging for commodities, but also through attestations of prices and record-keeping, and the physical location of transactions. Of considerable importance in terms of the process of transactions is the level of risk and uncertainty inherent to the process. Therefore, archaeological indications of uncertainty (e.g., poorly standardized packaging, poor quality of information from packaging, etc.) will encourage the search for hints of market mechanisms that alleviate such problems. Studies of distributions of marketed goods among households within a given site, an approach used with considerable success in anthropological archaeology (Hirth 1998; Crook 2000), are less suited to the archaeological record commonly encountered in classical archaeology where associations between commodities and the specific household of ownership are often difficult to establish. The localized re-use and multiple stages of discard for transport amphoras (and other traded ceramics) tends to obscure any differential access to these goods that may have once existed.

AMPHORAS IN MARKETS: SOME GENERAL OBSERVATIONS

Taking into account the sorts of market imperfections and responses to those problems in more modern settings, how did ancient markets operate? And more narrowly to my interests, how can the study of transport amphoras contribute to our understanding of this question? In seeking to establish a role for amphora studies in the broader study of ancient economies, a central problem needs to be addressed: amphoras were always only one part of a broader system of exchange of which they are the most often and best-preserved element. The contents held by the jar in the transaction(s) are rarely preserved, and re-use and re-filling makes this even more problematic (Lawall 2011a; 2011b); any 'paperwork' connected to the jar or cargo is rarely preserved (cf. Pébarthe 2000; Bresson 2000: 141–9; W. V. Harris 2006; E. M. Harris 2013b); the verbal information provided by the (trusted?) seller is, of course, long gone. What can be documented, over the long term and over a vast and varied geography, is the extent to which and when amphoras make concrete 'contributions' to the process of transaction. No less important is to note when or how amphoras,

taken on their own, serve more to confuse consumers than to facilitate transactions. I begin with what I see as key positive and negative features of amphoras in general terms as they might have operated within the tripartite model of supply – transaction – demand formulated by Harvey *et al.* These generalized features, however, ignore the more important historical perspective that can be gained by tracing features of such archaeological data through time. Therefore, the final section of this paper turns to the changing nature of amphora use in transactions over time.

Amphoras as Containers in Transactions

Various metaphors can be used to understand amphora use in ancient trade. Most commonly one thinks of the Coca-Cola bottle. The standardized size and recognizable shape of the bottle bring necessary information to the consumer, encouraging the purchase of a fixed quantity of ‘the real thing’. Amphoras, however, differ from Coke bottles in key elements: they are far less standardized and they have opaque walls preventing the fill level from being readily visible. They did not necessarily contain a specific product, nor were the contents of a specific or reliable quality. To the degree that Coke bottles provide reliable and consistent information, to that same degree or more so, amphoras confuse.

A second metaphor that could be used for the amphora is the modern shipping container. Primarily intended for maritime use and overland trucking (Levinson 2008), these boxes are highly standardized yet depend on other documentation for indicating their contents and the qualities of those contents. Amphoras, too, are largely intended for the movements of goods, particularly on ships (but even overland, although they are not so carefully designed for this function). Likewise, the amphora, like the shipping container, often provides little information itself as to the origins or nature of its contents. Like the amphora, a shipping container has to be opened to verify its contents, even to verify that the container was completely – not just partially – filled with its stated contents. But unlike shipping containers, amphoras are not necessarily standardized, so even the outer casing of the shipment – not just the inner contents – will have varied in volume from amphora to amphora.

Thus, although clear differences arise between amphoras and such modern analogues, the metaphors highlight key features of amphora use in ancient trade. Amphoras could be counted easily, but the goods in question could not be measured with great precision. In this sense, amphoras fit very well into a concept at the heart of a recent book by Johnstone (2011). He argues that Greek accounting, especially for individual interests, was largely based on ‘containerization’ rather than measurement. In bulk shipments, then, the counting-up of the amphoras must have been deemed acceptable and would have been appropriate for calculating taxes or administering other controls. In

an economic system that clearly placed great importance on the management (allowing or prohibiting entry) and taxation of goods entering a port or market (Stanley 1976; Bissa 2009; Capdetrey and Hasenohr 2012), the jars made accounting relatively straightforward.

The use of amphora stamps could also fit into this paradigm of containerization. One stamp can easily stand for large batches if the intention is simply to indicate point or ‘person’ of origin: the general shape of the stamped one should roughly match the others in the batch. But one stamp cannot stand for a batch if the precise or even minimal measurement is being certified by the stamp (cf. Finkielsztejn 2006; 2012): How could one know if the non-stamped jars also met the prescribed level of certification? An exception, yet one which highlights this point that the stamps are to be read alongside the shape, are the stamped amphoras of Acanthus (Garlan 2006). Here, the stamps specify the approximate modular size of the amphora, and an inspector or merchant could again work from the stamped to the non-stamped amphoras counting those of the same module as differentiated by shape.

Greater precision in the standardization of jars, as Philippa Wallace Matheson and Mac Wallace (1982) have shown to be the case for Hellenistic Rhodes, would certainly improve the link between jar counts and amounts of goods in question (see also Wallace 2004). This development might indicate a change in the structure and expectations of port-side activity with less acceptance of basic counting and greater interest in measurement. In such a scenario, the combination of the stamp, the distinctive jar shape, and presumably a spreading reputation for precision of capacity would make Rhodian amphoras more attractive to a wider range of merchants and consumers. Indeed, these beneficial features, all of which fit very well with Grassl’s discussion of the ontology of brands (1999), would have also facilitated the use of Rhodian amphoras in retail sales where precision of measurement would seem more important. But if we start thinking of the Rhodian amphora as branded packaging, it is still important to bear in mind the problems with the Coca-Cola bottle analogy. The contents of the Rhodian amphora were not a standard commodity of fixed, predictable quality. The mason jar, with its standardized size, reliable closure system, and ability to hold various commodities for storage or sale, is the better analogy.

Amphoras as Containers for Storage

This analogy of the mason jar also raises the matter of the amphora as a storage container. The possibility for long- or short-term storage of goods in amphoras provides sellers (whether they be the original producers of the goods or subsequent merchants) with greater choice as to when and where to enter the market; this element of choice is fundamental to the

supply and demand process of price creation. Of course, some products will be more suited to storage than others, but amphoras at least create the possibility. Amphoras, as storage containers, allow producers and merchants some degree of choice in when and where to enter the market (if they choose to exercise this choice). For producers, this means greater flexibility in ensuring that household needs are met before dispersing any surplus. For both the merchant and the producer this storage function contributes to giving these economic actors the status of wants traders rather than needs traders (Prasch 1995). It also means that no single producer needs to have a large amount of surplus to enter into the market process. This possibility creates an important bridge between householding economies and market economies.

Of course, amphoras, are not the only means of storage – they coexist with *pithoi* or other permanent storage facilities as the main vessels for household storage. Despite their shared function, they bring very different features to the economic possibilities of the household. A house with a stockpile of goods in amphoras has a quantifiable stock of goods in manageable units. If the household realizes there is a surplus at some point in the year, that portion of the stock is easily transferred to the market. On the other hand, with *pithoi* any surplus will have to be decanted to amphoras for export from the household. The amphora-stocked house in the archaeological record seems better suited to intermittent entry into the market system, while the *pithos*-stocked house more likely either simply receives and consumes goods or, in the case of a large-scale operation, consistently plans to store and then decant and distribute large quantities. For example, Nicholas Cahill (2002) found quite varied distributions of *pithoi* and amphoras at Olynthus with a clear distinction between houses in the ‘Villa section’ with large scale storerooms well equipped with *pithoi* as opposed to houses in the North Hill region more often with only one small *pithos* (transport/storage amphoras were not consistently recorded). Bradley Ault (2005), at Halieis, reported traces of at least fifty to seventy amphoras and two to three *pithoi* in most houses he studied. Excavations at New Halos (Haagsma 2010a) found three to eleven amphoras per house as compared with one to three *pithoi*. House 6 at New Halos with its relatively smaller size, yet larger numbers of amphoras (11) and loom weights (137, as contrasted with 13–34 in the other houses) seems more ‘market oriented’, both in agricultural goods and textiles, than the others. An interesting twist to such numbers would be to consider the potential impact of the nature of the abandonment, the cyclical nature of households’ needs for dispersal of surplus, and so forth. This is, I admit, a tentative idea, but it might repay the more thorough assembly of some comparative statistics and consideration of which houses at which sites, rural and urban, depend more on *pithoi* and which depend more on amphoras.

Stockpiling and withholding surplus may also be indicated by the range of dates of amphora stamps attested on individual shipwrecks. The Kyrenia ship, for example, which sank in the early third century BCE carrying just over 320 Rhodian amphoras and much smaller numbers of other Aegean and Levantine types, includes Rhodian stamps that span at least four years of Rhodian eponyms (Lawall 2011c). By contrast, the Cnidian area stamps of the slightly later (ca. 280 BCE) Serçe Limanı Hellenistic wreck include only one eponym abbreviation (Koehler and Wallace 1987). Few other Late Classical or Hellenistic shipwrecks have been studied in sufficient detail yet to consider the minimum range of years attested by the stamps.

Problems with Amphoras

And yet, amphoras in general terms bring many challenges to the details of the transaction process, and these negatives are of great significance in shaping and defining ancient markets. Amphoras obscure their contents. Once sealed, the contents are invisible; the specific quantity of the contents is unknown; the very identity and quality of those contents is likewise hidden. Tasting, smelling, or otherwise checking the contents of the amphora to be purchased, therefore, seems to have been a common – yet time consuming – activity in the marketplace (Figures 11.1 and 11.2; on such images see Massar and Vierbanck-Piérard 2013: 275–7).

Some jars might indicate the nature of their contents through their shape or appearance. For the most part, however, such information was of very limited reliability and depended heavily on the specific circumstances. Indeed, in a recent paper (2011c), I describe the many different degrees to which amphoras did, or more commonly did not, indicate their point of origin and how such indications would have operated in different marketing or exchange contexts.

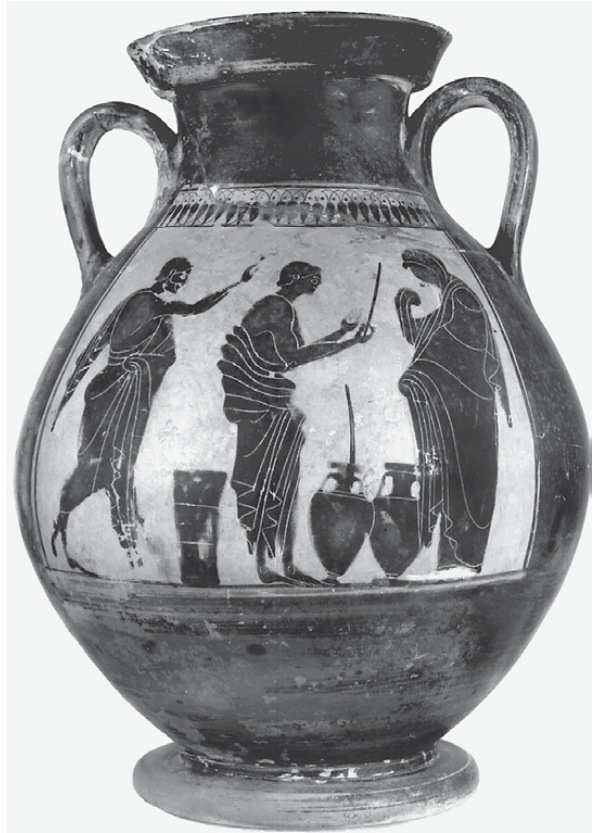
Likewise, the evidence for re-use, re-filling and reshipment of Greek amphoras (Lawall 2011a; 2011b) would have further challenged the consumer to know what he/she was actually buying. While some scholars remain skeptical of the extent to which such re-use occurred and hence the scale of this problem (e.g., Debidour 2011: 36), it seems to me that if the occurrence is clear in even a few archaeological cases, the ancient reality must have been even more significant.

This account of problems related to information risks implying that I imagine the amphoras themselves to be the only possible means for gaining the knowledge about products needed for the transaction. Quite to the contrary, as noted earlier in this chapter, one must admit that any number of now-lost means could have helped convey such information: labels or tags of perishable material or ‘paperwork’ not even attached to the amphora itself. And yet, some amphoras did provide information more reliably than others. Since this is the case, we must assume that there was believed to be some advantage to making

the jar better ‘speak for itself’. Here I am thinking of amphoras with stamps carrying information as to place of origin, date, and perhaps maker; graffiti or dipinti added to the jar; and even the specificity of the relationship between the shape of the jar and the producing region or city. Equally important, however, is the fact that such a speaking role for the amphora was not a prerequisite for transactions; most amphoras were either mute or lying.

Amphoras, Small-Scale, and Large-Scale Purchases: Dealing with Poor Information

Many features of modern bazaars and other markets adapted to poor quality of information fit the situation of marketing the contents of amphoras. Amphoras as packaging are often uninformative especially with multiple episodes of re-use. The capacities, especially at the jar-by-jar level are unreliable. In ancient literary characterizations of ancient marketplaces, the quality of merchandise was a frequent point of complaint (Van Alfen 2011c: 200). So how, under such circumstances, could a merchant make a profit? Prices set in advance (Migeotte 1997; 2006; Descat 2000) might well build in some profit above the ‘farm gate’ price for the goods, but each merchant would have his own variable overhead costs. To turn any profit, the merchant could mix high- and low-quality goods, and this action is facilitated by the more negative qualities of amphoras (opacity and variation in capacity). So price as a variable might be held roughly stable, and demand for most amphora-borne goods would also be relatively stable (as generally we are talking about wants-traders, both buyers and sellers). As a result, merchants, once they chose where and when to enter the market, only had the variable of quality for manipulation. No wonder then that merchants are so often criticized for how they adulterate products, no wonder that *agoranomoi* (and other officials) should be so concerned with complaints about product quality



11.1 Black Figured Pelike, Obverse (no. RC 1063) Image courtesy of the Soprintendenza per i Beni Archeologici dell'Etruria Meridionale.



11.2 Black Figured Pelike, reverse (no. RC 1063) Image courtesy of the Soprintendenza per i Beni Archeologici dell'Etruria Meridionale.

(Van Alfen 2011c: 217–24), and no wonder consumers making small purchases are often depicted in textual and visual sources as tasting before purchasing. Such complaints and concerns, however, only show that some merchants went too far in upsetting the system; the majority must have played within workable parameters or the system would not have functioned at all.

Large-scale and hence higher risk purchases of amphora cargoes did occur, and we have seen that some producers went to some lengths to improve the informative nature of their containers at least in that initial shipment. In the background, too, is the possibility that ‘paperwork’ that no longer survives helped to ease some of the risks inherent in such larger purchases. The broader debate of the extent to which long-distance shipping in any period was dependent on

pre-established ties is also closely related to discussions in modern economies in which transactions occur within an ‘embedded’ social structure (see p. 259). Garlan has explored this question in terms of the distribution of Thasian fabricant (producers) stamps and has concluded that there are no such patterns, as would be expected if producers and long-distant consumers had longstanding ties (Garlan 1999a: 91; 2000: 182). From Athenian court cases of the fourth century one gets the sense that there was some pre-planning of shipping ventures, but others simply trusted to luck (as pointed out by Pébarthe 2012). The ‘sample-size’ in terms of texts is fairly small, so the actual extent of dependence on existing social connections in long-distance shipping is difficult to measure from that perspective alone. And yet, to return to Johnstone’s (2011) focus on containerization and Wallace’s (2004) observation that risk is greatly reduced for amphora transactions involving bulk cargoes, trust between unfamiliar merchants and buyers might not be so problematic at the port as it would be at the retail market.

AMPHORAS IN MARKETS: AN HISTORICAL PERSPECTIVE

Various characteristics of amphoras, therefore, contribute either positively or negatively to the process of 'bargaining transactions'. These characteristics raise the likelihood that transactional processes closely resembling those in modern bazaars and other non-standardized goods markets likely pertained in antiquity, especially for smaller scale transactions. And yet, these same features of amphoras show considerable range of variation over time and space, so a consideration of the evidence from an historical perspective is necessary. The following survey highlights archaeological indications of economic, institutional change between the sixth and fifth centuries on the one hand and the fourth through second centuries on the other.

Constant Features

Certain elements remain largely constant. The supply to amphora-related transactions should have come most consistently from surplus generated by large landowners, their tenants, or other dependents, and by the produce of public or temple-owned land. The scale and consistent availability of such surplus, whether in diachronic or synchronic perspective, is subject to much debate (e.g., Hopkins 1980; Osborne 1991; Foxhall 1992; Kron 2008b; 2011). Some degree of mobility, whether in location of land ownership or ability to travel to marketplaces, exists in all periods even if it is more often thought of as feature of Hellenistic Greece. Price creation throughout the period in question could have occurred with reference to coined money (likely with increasing frequency) (Schaps 1997; 2004; Burkhalter 2006; Grandjean 2006; Criscuolo 2011). To judge from visual and literary references of various dates, haggling was a consistent element, with external intervention in the price realm often a possibility but one best attested for the later period (Bresson 2008: 119–26; Migeotte 1997). The location and physical setting for exchange would have always varied widely: temporary market stalls, small permanent shops, larger *stoas*, and other multi-purpose market buildings (Chankowski and Karvonis 2012; Karvonis 2008; 2010; Rotroff 2009; Milbank 2002). While the latter such structures are far more commonly seen in the Hellenistic commercial landscape (Mayer 2012: 38–41), smaller and less permanent structures could have housed similar marketing behaviors as occurred in the larger buildings. Prices are reported in terms of container type and the geographically based name of the container rather than by quality or more precise descriptions of quantity – but here too the better evidence comes from the later period (Kruit and Worp 2000). Throughout the period, the exchange itself might involve a spectrum from direct exchange between producer and buyer to a great distance between the producer and the buyer as mediated

by multiple middlemen. Quantities involved might range from a cargo of a few thousand amphoras to a small purchase decanted from one jar. The demand side of the model is populated in general terms by urban dwellers without access to their own such produce, and further demand would be created by community events requiring such goods. Crop failures or other crises, whether localized or widespread, would create demand from those who would otherwise produce more of their own immediate needs. Wealthy individuals, regardless of access to their own sources of production, might also provide demand for purchased supplies. Passing armies would also create a (hopefully temporary!) spike in demand (Chaniotis 2011: 126; Couvenhes 2006: 413–24 covering both seized and marketed supplies). Against this general backdrop, significant variation is readily apparent between the sixth and second centuries.

Sixth through Fifth Centuries BCE

In terms of the supply of amphora-based transactions in the sixth through fifth centuries, little is known of the extent to which amphora producers might have been directly associated with agricultural producers. Known kiln sites (such as those at Miletus [Seifert 2004: 1]; Clazomenae [Ersoy 2003]; and Mende [Anagnostopoulou-Hatzepolychrone 2006]) tend to be found within or near cities, but this is likely more a result of research strategies than the reality of ancient geography. On the other hand, traditions related to amphora design spread across multiple civic territories into broad regional styles, with the island of Chios coming closest to offering an exception (Lawall 2011d). Markings on the jars at the point of production tend to involve very few variables; most producers used no markings; and markings never refer explicitly to the city of production (Lawall 1995). Only the diverse pictorial stamps of the region of Thasos offer a somewhat consistent, but now utterly opaque, system of amphora marking in the late sixth through early fifth centuries (Garlan 1999a: 54–8). These images could refer to magistrates; they could refer to workshop owners or potters; they could refer to landowners. There are, however, no names, whether personal or topographical, stamped or painted on sixth-century amphoras (though names as graffiti are common; see Johnston 2004).

Moving into the realm of the transactions themselves, the activity of haggling becomes explicit at least for small-scale purchases as illustrated by vase paintings. The quality of the product is being checked very carefully! Larger-scale transactions also occurred. The Elephantine customs papyrus from 475 BCE attests to fees being paid in kind with reference to bulk cargoes (Yardeni 1994; Briant and Descat 1998).

Cargoes themselves from shipwrecks attest to at least a few hundred jars from one local region (although not necessarily all from one workshop) being loaded on board initially as seen at the Pabuç Burnu wreck (Greene *et al.* 2008) or the Tektaş Burnu wreck (Carlson 2003). By the late fifth century, cargoes of amphoras numbering in the thousands are attested (Hadjidakis 1996). After a few stops, however, especially once such ships cleared the Aegean basin, smaller batches often replaced what was offloaded at successive stopping points. One can compare, for example, the more diverse cargo of the Pointe Lequin Ia wreck (Long *et al.* 1992) or the Gela I wreck (Panvini 2001), each with diverse Aegean cargoes against the La Love, Bon-Porté, or Dattier wrecks with dominant cargoes of Etruscan or Massaliote amphoras (Pomey and Long 1992). Buyers and sellers would often be operating with jars of quite different sizes, contents of uncertain quality, and jars potentially in a state of reuse and reshipment.

At best some sort of complementary ‘paperwork’, perhaps hinted at by the few lead letters (E. M. Harris 2013b: 113–23) and removable lead labels (Lequément 1975; Rotroff 2011) that survive, might have identified the origins and qualities of the goods in the jars (see also Bresson 2000: 141–3). There is growing consensus as to the high degree of information exchange and buyer/seller knowledge in the Archaic fineware trade (Paleothodoros 2007; Osborne 2007 goes further to argue that the evidence suggests mutual knowledge far beyond simply the market in finewares), a transaction system in which what you can see is exactly what you get. Archaic amphora transactions were much more subject to uncertainty.

The aggregate picture of local demand can be reconstructed on the basis of amphora finds on land at specific sites. For the late sixth through fifth centuries, amphora types of the local region dominate amphora assemblages within the Aegean basin, regardless of specific location (e.g., Lawall 2006: 253; Greene *et al.* 2008: 688–93). Thus while the wealthiest minority or the community coffers might have been willing and able to attract more distant imports, the significant portion of transactions involved the local produce. Athens offers a striking exception to this pattern especially from the earliest decades of the fifth century, but even in the late sixth century there is never a dominance of local amphoras in Athenian deposits. After ca. 480 BCE there is no known Attic local transport amphora, but surely the lack of local production was a response to a ready supply of diverse imported jars (Lawall 1995; 2011e). Farther afield in the Pontic region and the Levant, the Ionian cities, many of which are attested as being active in long distance trade and settlement, provide the bulk of the imported amphoras (Monakhov 1999; there is no such synthesis for the Levant). In some cases, Greek consumers have been postulated for these imports; in other cases, local indigenous use, at least of the jars if not

their contents, is clearly indicated especially by finds in non-Greek burials and settlement sites.

Fourth through Second Centuries BCE

The Hellenistic evidence is in many ways richer, but even in areas of evidence that are shared in the Archaic period there are clear differences in behavior.

At the supply end, the city is prominently involved in amphora production with many (although not all) production areas using stamping systems that refer explicitly to the city and civic magistrates (Garlan 2000; Kac 2007). Other stamping systems never refer to the city but do use names or abbreviations, generally interpreted as makers' names. The named individuals, however, could be landowners who control both production of the goods and the jars and could even have been involved with distribution. Hellenistic amphora shapes often refer to a narrower region, sometimes even a specific political unit (e.g., the amphoras of Rhodes). Kiln sites are known from a much wider area than was the case in the Archaic period and show a much wider topographical spread of production areas both near and far from urban centers (Lawall 2011a). This distribution raises the likelihood of connection between the agricultural producers and the container producers, hence facilitating coordination of production and packaging of surplus. These changes in terms of the amphora evidence should be considered alongside the textual evidence in this period for institutions supporting supplies to transactions: banks for the productive investment of cash assets and building needed capital (Gabrielsen 2005); state mandates for precisely how civic land is to be used (Reger 2007: 465–6); diversity of options for landownership and opportunities for emigration or immigration (Archibald 2011; Oliver 2011); as well as social and political pressures to convert produce of the land to cash assets for money-based services to the state (Osborne 1991; cf. Martin 1996, arguing for these pressures already in the sixth century).

Hellenistic evidence for prices is simply very different from the Archaic. For certain areas and periods in the Hellenistic world, we have useful series of prices (Reger 1994; 1997; Cadell and Le Rider 1997; Chankowski-Sablé 1997; Grainger 1999; Bresson 2006); and government intervention in pricing is well attested (see pp. 265, 267). In terms of amphora-borne commodities, Ptolemaic papyri tend to a focus on three variables: the number of containers of unspecified volume, the names of the containers nearly always carrying a place-name designation, and the product in very general terms (usefully compiled by Kruit and Worp 2000). Such documents, however, also attest to other costs (taxes, transport costs, accidental losses; see McGing 1998 on banditry) behind sales and the potential for military demand. A greater portion of Hellenistic jars shows better standardization than their Archaic counterparts, so reckoning up

any transaction by numbers of containers could be a more accurate process (Wallace 2004; Wallace-Matheson and Wallace 1982).

Hellenistic shipwrecks offer far more examples of larger and more homogenous amphora cargoes than the Archaic or Classical periods, although this impression may be partly shaped by the fact that there are simply more known wrecks of this later period (Parker 1992). While a very few such larger cargoes are known from the Greek East, such as the Pamphylian-dominated wreck documented by the Nauticos corporation (Lawall 2005/2006), most are from the western Mediterranean and never include more than a trace presence of Aegean amphoras in their otherwise homogenous central Italian, Punic, or Adriatic cargoes (Parker 1992). Alongside such larger, more homogeneous cargoes, one should bear in mind that some wrecks still show great diversity; the Anticythera early first century BCE wreck is perhaps the best-known Aegean example (Weinberg *et al.* 1965; Kaltsas *et al.* 2012). A generous reading of these data might indicate a more frequent occurrence of direct shipping of large cargoes, fewer middlemen, and hence greater clarity of the nature of the goods in question for both the seller and the buyer.

Such larger, more direct shipments would have been supported by various features of Hellenistic demand: cities were larger; rural populations and net production may have shrunk in some areas especially in the late second century (Alcock 1996: 53–80; Shipley 2005; Reger 2007); armies were larger and predictably in need of supplies (Archibald 2011: 46–51; Chaniotis 2005); monarchs had disposable wealth and the desire to use it conspicuously (Davies 2005a); prominent citizens might win a wide range of honors that, even if only indirectly, facilitated their participation in transactions both as buyers and sellers (Gabrielsen 2011: 235–8).

General patterns of demand, as indicated by Late Hellenistic amphora assemblages at sites on land, show a continuing importance of localized circulation of goods in amphoras, but various amphora types – Rhodes, Cos, and Cnidus in particular – more routinely appear beyond their local zones and contribute significantly greater portions to overall amphora assemblages than was seen earlier (Lawall 2005; Lawall *et al.* 2010).

Changes in Markets

Are we seeing in this comparison a development toward clearing away the impediments to free market behavior by lowering transaction costs and giving free reign to rational choice, with prices shaped by supply and demand? To some extent perhaps this is true. A greater scale of surplus, packaged by a more organized, standardized, and informative amphora system, shipped more directly, and sold, at least initially, in larger cargo units could all be interpreted as a success story in terms of new institutional economics. Or, perhaps we are

seeing a shift from a greater role for individual interest in production and consumption to a greater structuring role for the *polis* and the kingdom in order that broader goals such as military success, benefactions, collection of revenues, and necessary conspicuous displays are facilitated through developing institutions, regardless of whether they are concerned primarily with exchange of goods. This increased institutionalization might have brought some improvement in the area of transaction costs (whether deliberate or not), but many difficulties remain seemingly unaddressed (e.g., uncertainties still pertaining in small-scale transactions, specific quantities and qualities of goods, etc.).

And yet, if the Hellenistic socio-political structure had this indirect effect of facilitating exchange at least at the larger scale, what are we to make of the fact that Archaic exchange, too, somehow ‘worked’? Osborne (2007) has argued that merchants and consumers were well aware of one another’s interests. Alongside the evidence of Attic pottery catering to specific Etruscan markets, the point I noted earlier of Ionian amphoras so intensively shipped to areas of Ionian settlement might well support Osborne’s view and move his fineware-based argument into the broader freight realm. As I noted earlier, however, what you see is largely what you get in buying a pot; when buying a specific container of wine, oil, fish, fruit, cattle ribs, and so on, you could not even see much less taste the commodity without considerable effort. Even admitting some level, even a high level, of overseas knowledge, I still find it hard to remove the substantial level of uncertainty as to the specific qualities of goods bought and sold from amphoras on a daily basis in Archaic, or for that matter, Hellenistic, retail marketplaces.

ARCHAEOLOGY AND ANCIENT GREEK MARKETING

The extent to which uncertainty in marketing was endemic to ancient commodity containers together with the rhetorical topos of the untrustworthy merchant argue strongly for a market that had to contend with considerable uncertainty. A vast array of research, dealing with disparate cultural and historical contexts, associates market uncertainty with a response based on social networks and institutions. These surely dynamic institutional bases for ancient markets did not, however, lead inexorably toward an ideal market with ever-lower transaction costs and ever-more autonomous economic actors. The possibilities for improvement were certainly known and accessible: the improved capacity standardization and increasing frequency of amphora stamping for Rhodian amphoras make this clear, as do the various economic developments noted for the Hellenistic period. And yet, plenty of amphora producers ignored these developments (even the famed Coan amphoras were rarely stamped, and those that were provide little additional information). Even in the later periods, uncertainty remained.

Uncertainty in markets and a network-dependent response to such problems do not disqualify ancient exchange from being considered under the rubric of the market. But they are considered as such without reference to the presence or absence of household self-sufficiency, the scale of production or transactions, the degree of labor specialization, or the integration of price-creating mechanisms throughout the system. In other words, this chapter has enlisted archaeological evidence alongside other sources to articulate ways of thinking about ancient markets without engaging in the endless struggle to define thresholds of activity and autonomy of behavior that can be considered a market economy as opposed to something more ‘primitive’ or minimalistic.

Once the possibility is raised that the ancient agora operated more like the modern Greek *laiki* market and less like Carrefour, then other institutional aspects of similarly socially embedded markets can be explored: when and why producers enter their goods into the market, expectations and goals for profit, and – to return at last to the other theme of this volume – the intersection between ideologies of self-sufficiency and participation in such markets.

PART IV

MARKETS, COMMODITIES AND TRADE NETWORKS

AEGEAN-LEVANTINE TRADE, 600–300 BCE

Commodities, Consumers, and the Problem of Autarkeia

Peter van Alfen

INTRODUCTION

A frequently occurring trope in Athenian comedy is the list enumerating various *things*, sometimes at comically ridiculous length. Hermippus' well-known fragment, for example, two dozen lines long, catalogues an equal number of items imported to Athens, from fine Carthaginian textiles to Paphlagonian acorns, 'the ornaments of a feast' (fr. 63 K-A; *apud* Ath. 1.27e–28a). These lists appear in different contexts in the comedies, but many are linked to the market, like the cook's grocery list.¹ Whatever their dramatic or literary function, these lists share the common trait of highlighting for the audience goods from their material world, some quite mundane, others far more exotic. While lists, or even the mention of various goods, are nothing new to ancient literature,² the inclusion of *all* types of commodities in these comedic lists is noteworthy. When Homer, for example, spoke of goods he gravitated towards the prestige items, like weapons, silverware, and fine textiles, owned and traded by his elite protagonists.³ In comedy of the fifth and fourth centuries these prestige items also appear, but so does everything else imaginable, reflecting the fact that as denizens of the world's greatest *emporion*, Athenian shoppers had access to nearly everything the ancient world had to offer in terms of food, clothes, durable goods, and art.⁴ Perhaps then we can detect in the exuberance of these lists a celebratory undertone, certainly one of language, but also one of bounty. If so, we have recorded in these lists, maybe for the very first time anywhere,

the joys of shopping: there was, in Athens especially, a delightful variety of things to be owned or consumed, and the agora was a place where one might spend the day sampling, desiring, and buying.⁵ This bounty of imported exotica and other goods in their agora certainly gave the Athenians a general sense of wealth, well-being, and importance.⁶ In a verbal exchange between the Sausage Seller and a slave in Aristophanes' *Knights*, for example, the slave links seaborne commerce, and its attendant imported commodities and taxes, with the Athenians' happiness and health. Pointing to the cargo ships and *emporía* in the Athenian-controlled Aegean, he asks the Sausage Seller: 'How can you deny that you're happy/well/flourishing?' The verb *eudaimonein* encapsulates all of these meanings.⁷ A market diminished, on the other hand, or more systematically emptied of its imports, was demoralizing and depressing, as Aristophanes' *Acharnians* illustrates.

Looking back to a time before such bounty, the Greeks had a general sense that a substantial amount of economic expansion, hand in hand with a greater variety and volume of available commodities, had occurred in certain cities and perhaps the entire Aegean over the course of the late sixth and early fifth centuries. In his *Archaeology*, Thucydides (1.13) recounts how Greek *poleis* in general grew wealthier throughout the Archaic period primarily by means of seaborne commerce. Alexis (*FGrH* 539 F 2; *apud* Ath. 12.540d) more specifically notes that the late sixth century tyrant Polycrates enriched Samos by importing goods from many other (Aegean) cities; Clearchos (*apud* Ath. 12.540e) remarks that he literally filled (*eneplese*) Hellas with all kinds of foods. Aristophanes also uses the 'filling' metaphor (*Eq.* 813–15): Themistocles found Athens half-empty, filled her all the way up, and 'he added new seafood dishes to her menu while taking away none of the old' (trans. Henderson). With new *things* filling Athens and Greece came a sense of general prosperity, the memory of which Diodorus Siculus recorded centuries later (12.1.3–4): 'every city of Hellas enjoyed such an abundant prosperity (*euporia*) that all men were filled with wonder at the complete reversal of their fortune. From this time over the next fifty years (ca. 480–430) Greece made great advances in prosperity (*eudaimonia*).'⁸ Diodorus' accuracy we might question, but he nevertheless echoes the general clamor of a late Archaic and Classical Greece that was doing generally quite well indeed, especially in terms of imports.

This is not the place to delve into the economic expansion of the Archaic and Classical Greek world, the concurrent monetization of many of its economies, or the rise of markets.⁸ Instead, I would like to focus on the goods that filled the agoras in these prosperous times, and the excited responses to this brimming bounty. It is my contention that the type of austerity invoked by any normative notion of *autarkeia* may have been a fine topic for dinnertime conversation, but few would gladly (re)turn to such a meager existence in reality, especially when reclining on Carthaginian couch-covers and nibbling off a

plate of Paphlagonian acorns – or, at least, aspiring to do so, whether urbanite or not. Although few Greek communities were well enough endowed with sufficient natural resources to allow them to be truly self-contained and still be competitive, politically or economically, much of what they imported were not the basics of life, but rather a *way of life*.

To date, unfortunately, no comprehensive study of the goods on offer in Archaic and Classical Greek markets and *emporía* has appeared, nor is likely to appear in the near future. Such a study would necessarily be encyclopedic, and would depend on evidence from the broadest range of literary and archaeological sources, from across the Mediterranean Basin and beyond, in order to capture the hundreds, if not thousands of individual goods flowing into (and out of) the Greek world. What I present here instead is an overview of items appearing in only one segment of this broader array: those commodities that flowed out of the East toward the Aegean, and those that flowed out of the Aegean toward the East in return. This then is only a partial picture of the total number of possible commodities in Mediterranean trade, and what proportion of it we can only guess; as the lists in the comic poets remind us, Athenian markets, those best documented, contained goods originating from both Attica itself and the other side of the world. But even so, my list proves useful for thinking about the problem of self-sufficiency vis-à-vis imports and consumption. But before we turn to that, a few words about problems and methods.

PROBLEMS AND METHODS

As part of a larger project that sought to examine Levantine–Aegean commercial activity following the Persian Wars of the early fifth century, I compiled the commodities listed in [Tables 12.1](#) and [12.2](#) from Greek and Semitic textual sources and from archaeological evidence. My intent was to identify and then define as specifically as possible – botanically, chemically, culturally – the goods appearing in Levantine–Aegean long distance trade during the Persian period, that is from time of the rise of the Persian Empire in the early sixth century to its demise at the end of the fourth century. Each of the items noted here is discussed at length in my thesis *Pant’agatha* (van Alfen 2002).⁹ Readers will immediately note there one of the key problems in studying ancient commodities in aggregate: the nature of our evidence, with the notable exception of a few durable, manufactured goods like ceramics and coins, does not permit much fine tuning. For most commodities we cannot trace chronologies, volumes of trade, or even origins with any precision at all, which means it is all but impossible to construct a solidly dynamic, diachronic picture of the ebb and flow of individual goods and correlate this with others. What we are left with is a rather more static, synchronic view from which we are able, at times, to detect smaller and larger traces of movement of various types.

TABLE 12.1. *An Overview of Commodities in Aegean-Levantine Trade, c. 600–300 BC***A: East to West****1) Far East (SE Asia, India, China, etc.)**

Amomon, Beryls, Cinnamon/Casia, Corundum, Costos, Cotton, Eaglewood, Ebony, Indigo?, Ivory, Lapis Lazuli, Nard, Nutmeg, Pepper, Sandalwood, Silk, Tin, Turmeric

2) Middle East (Media, Mesopotamia, etc.)

Asafoetida, Bitumen, Peacocks, Rice, Sesame (oil)

3) Arabia

Calamus, Frankincense, Laudanum, Marine Shells, Myrrh, Pearls?

4) Levant

Alabaster, Aspalathus, Antimony?, Azurite, Balm (Myrrh), Calamus, Camel's Thorn, Cedar, Chalk, Cinnabar, Copper, Dates, Egyptian Blue, Galbanum, Glass, Green Earth, Gypsum, Henna, Malachite, Orpiment (Realgar), Ostrich Eggshells, Pomegranate, Semidalis, Sumac, Verdigris

B: Aegean to the East (and Egypt)

Amber, Fineware ceramics, Fuller's Earths, Iron, Lead, Marble (raw and finished), Silver, Styrax, Sugar of Lead, Terracottas

C: Egypt/Africa to the Aegean and Levant

Alum, Balanos oil?, Black Cumin, Castor oil?, Cats, Ebony, Egyptian Blue, Ivory, Linen, Monkeys, Natron

D: Asia Minor to the Aegean and Levant

Crimson, Lykion, Saffron, Styrax, Touchstone

E: ubiquitous

Alkanet, Almond (oil), Arms?, Art works, Chalcedony, Cumin, Figs, Furniture, Galingale, Garnet, Gold, Hides, Jewelry, Lichens, Livestock, Madder?, Marine Purple, Metalware, Ochre?, Olive oil, Perfumes, Quartzes, Raisins, Safflower, Salt, Slaves, Sulphur, Terebinth, Textiles, Timber, Tortoise Shell, Wine, Woad, Wool

One way to detect movement is to look beyond the immediate chronological boundaries I have set, roughly 600–300 BCE, in order to identify first those goods that were traded continuously since before and then into the Persian period, and secondly those that were likely introduced into long-distance trade at some point after 600 BCE. Under the heading ‘Date’ in [Table 12.2](#) readers will find the earliest date of the particular commodity appearing in Levantine-Aegean trade as attested textually, archaeologically, or both; the key can be found at the bottom of [Table 12.2](#). Although lacking, again, great precision and very much dependent on the nature and quality of the evidence, we can still glean some impressions of a type of movement, to which I shall return momentarily.

When dealing with commodities in aggregate we face as well problems of definition, notably: What is a commodity (and what is it not)? How do we differentiate between classes and types of goods? And is there a meaningful distinction between luxury and staple goods? We shall briefly consider each of these questions in turn.

How we define *in toto* the items transported long distances very much depends on our perspective. The term ‘commodities’ in contemporary

TABLE 12.2. *The Date and Origin of Commodities in Aegean-Levantine Trade, c. 600–300 BC*

ENGLISH	ID	TEXT	ARCH	DATE	ORIGIN	COP'D
Alabaster	alabaster*	G/S?	Yes	BA	Levant, Egypt	yes
Alkanet	<i>Anchousa tinctoria</i>	G/S?		PP?	ubiquitous	
Almond (oil)	<i>Amygdalus communis</i> *	G/S	yes	BA	ubiquitous	
Alum	(various)	G		BA	Egypt	
Amber	amber	G	yes	BA	Europe	
Amomon	<i>Amomum sublatum</i>	G		PP?	Far East	
Antimony	antimony	G/S		IA?	Levant?	
Art works	N/A	G	yes	BA	ubiquitous	yes
Asafoetida (*Galbanum)						
Azurite	copper carbonate hydroxide	G?	yes	PP?	Levant	yes
Balanos (oil)	<i>Balanites aegyptica</i>	G		PP?	Egypt	
Balm (*Myrrh)						
Balsam (*Myrrh)						
Bdellium (*Myrrh)						
Beryls (emerald)	beryl	G/S?		PP?	Far East?	yes?
Bitumen	bitumen	G/S	yes	PP?	Levant, Mid East	
Black Cumin	<i>Nigella sativa</i>		yes	BA	Levant, Egypt	
Calamus	<i>Acorus calamus</i> *	G/S		BA	Arabia, Levant	
Chalcedony	(various)	G/S?	yes	BA	ubiquitous	
Camel's Thorn (aspalathus)	<i>Alhagi spp.</i> *	G		PP	Levant?	
Cardamom	<i>Elettaria cardamomum</i>	G		PP?	Far East	
Cassia	<i>Cinnamomum cassia</i>	G/S		PP?	Far East	
Castor Oil	<i>Ricinus communis</i>	G/S		PP	Egypt	
Cats (leopard, cheetah)	<i>Panthera pardus, Acinonyx jubatus</i>	G		PP	Africa Asia Min?	
Cedar	<i>Cedrus libani</i>	G/S		PP	Levant	
Cerrusite (*Ochre)	lead carbonate					
Chalk (*Gypsum)	calcium carbonate					

(continued)

TABLE 12.2. (cont.)

ENGLISH	ID	TEXT	ARCH	DATE	ORIGIN	COP'D
Cinnabar (vermilion)	mercury sulphide	G/S?	yes	PP	Levant	yes
Cinnamon	<i>Cinnamomum zeylanicum</i>	G/S		PP?	Far East	
Copper (bronze)	copper	G/S	yes	BA	Levant?	
Corundum (ruby, sapphire)	aluminum oxide	G/S?		PP	Far East	
Costum	<i>Saussurea lappa</i>	G/S		PP?	Far East	
Cotton	<i>Gossypium herbaceum</i>	G/S?	yes	PP	Far East	
Crimson (kermes)	<i>Kermococcus vermillio</i>	G/S		IA IIA	Levant, Asia M.	
Cumin	<i>Cuminum cyminum</i>	G/S		BA	Aegean, Levant	
Dates	<i>Phoenix dactylifera</i>	G/S		PP?	Levant	
Eaglewood	<i>Aquilara agallocha</i>	S?		IA IIA	Far East	
Ebony	<i>Dalbergia spp.*</i>	G/S	yes	BA	Far East, Africa	yes
Egyptian Blue	calcium copper silicate	G	yes	BA?	Levant, Egypt	
Figs	<i>Ficus spp.</i>	G/S		BA	ubiquitous	
Fineware	N/A	G/S	yes	BA	Aegean	yes
Frankincense	<i>Boswellia spp.</i>	G/S		IA	Arabia, E. Africa	yes
Fuller's Earths	(various)	G/S		PP	Aegean	yes
Furniture	N/A	G/S	yes	BA	ubiquitous	yes
Galbanum	<i>Ferula spp.</i>	G/S		PP	Mid East	
Galena (*Antimony)	lead sulphide					
Galingale	<i>Cyperus spp.</i>	G		BA	Aegean, Levant	
Garnet	garnet	G/S?		BA?	ubiquitous	
Glass	silicate compound	G/S?	yes	BA	Levant Egypt	yes
Gold (coin)	gold	G/S	yes	BA?	ubiquitous	
Grass, Lemon (*Calamus)						
Green Earth	celadonite		yes	PP	Levant	
Gypsum	calcium sulfate dihydrate	G/S?		PP	Levant	
Henna (camphire)	<i>Lawsonia inermis</i>	G/S		BA	Levant?	

Hides	(various)	G/S		BA?	ubiquitous	
Indigo	<i>Indigofera tinctoria</i>	S?	yes	BA?	Far East	
Iron	iron	G/S	yes	IA IIB	ubiquitous	
Ivory	< <i>Loxodonta</i> spp.*	G/S	yes	BA	Far East, Africa	yes
Jewelry	N/A		yes	BA	ubiquitous	yes
Khrysokolla (*Malachite)	copper silicate					
Laudanum	<i>Cistus</i> spp.	G/S		PP	Arabia	
Lapis Lazuli	lapis lazuli	G/S?	yes	BA	Far East	yes
Lead	lead	G/S	yes	IA IIB	Aegean, Far West	
Lichens	<i>Rocella</i> spp.*	G/S?		PP	ubiquitous	
Linen	<i>Linum usitatissimum</i>	G/S	yes	BA	Egypt	
Litharge (*Ochre)	lead monoxide					
Lykion	<i>Rhamnus petiolaris</i> *	G		PP?	Asia Min.	yes?
Madder	<i>Rubia tinctoria</i>	G/S?	yes	BA?	ubiquitous?	
Malachite	malachite	G/S?	yes?	PP?	Levant?	yes
Marble	marble	G/S?	yes	PP	Aegean	
Marine Purple	(various)	G/S	yes	BA	ubiquitous	yes
Mastich (*Terebinth)						
Metalware	(various)	G/S	yes	BA	ubiquitous	yes
Minium (*Ochre)	lead tetroxide					
Monkeys (apes)	(various)	G/S		BA	Africa	
Myrrh	<i>Commiphora</i> spp.	G/S		BA	Arabia, Levant	yes
Nard (spikenard)	<i>Nardostachys jatamansi</i>	G/S		IA IIB	Far East	yes
Natron	potassium carbonate*	G/S		PP	Egypt	yes
Nutmeg	<i>Myristica</i> spp.	G/S		PP?	Far East	
Ochre	iron oxides (various)	G/S?	yes	IA IIB?	ubiquitous	yes
Oil	(various)	G/S	yes	BA	ubiquitous	
Orpiment	arsenic sulphide	G/S	yes	BA	Levant, Asia Min.	
Ostrich (eggs)	<i>Struthio camelus</i>		yes	BA	Egypt, Levant	
Peacock	<i>Pavo cristanus</i>	G		PP	Mid East	

(continued)

TABLE 12.2. (*cont.*)

ENGLISH	ID	TEXT	ARCH	DATE	ORIGIN	COP'D
Pearls		G	yes	PP	Arabia?	
Pepper	<i>Piper spp.</i>	G	yes	PP?	Far East	
Perfume	(various)	G/S		BA	ubiquitous	yes
Pomegranate	<i>Punica granatum</i>	G/S	yes	BA	Levant	
Quartzes (agate)	quartz	G/S?	yes	BA?	ubiquitous	
Quartzes (amethyst)	(various)	G/S?	yes	IA IIB	ubiquitous	
Raisins	<i>Vitis vinifera</i>		yes	IA	ubiquitous	
Realgar (*Orpiment)						
Rice	<i>Oryza sativa</i>	G/S?		PP	Far East	
Rock Crystal (*Quartz)						
Safflower	<i>Carthamus tinctorius</i>	G/S?	yes	BA	ubiquitous?	
Saffron	<i>Crocus sativus</i>	G/S?		BA?	Asia Min.?	yes
Salt	sodium chloride*	G/S		PP?	ubiquitous	
Sandalwood	<i>Santalum album</i>	S		IA IIA	Far East	
Sesame (oil)	<i>Sesamum indicum</i>	G/S		BA	Mid East?	
Shell, Marine	(various)		yes	BA	Arabia	
Shell, Tortoise	(various)	G		BA	ubiquitous	
Silk	< <i>Bombyx mori</i> *	G/S?	yes	IA?	Far East	yes?
Silphium (*Galbanum)						
Silver (coin)	silver	G/S	yes	IA IIB	Aegean Far West	yes (coins)
Slaves	N/A	G/S		IA IIB?	ubiquitous	
Stibnite (*Antimony)	antimony sulphide					
Styrax, Storax	<i>Liquidambar orientalis</i>	G/S?		PP	Aegean, Asia Min.	yes
Sugar of Lead	lead acetate	G		PP	Aegean	
Sulphur	sulphur	G/S		PP	ubiquitous	
Sumac	<i>Rhus coriaria</i>		yes	BA	Levant	
Sweet Flag (*Calamus)						

Terebinth	<i>Pistacia spp.</i>	G/S	yes	BA	Levant, Aegean	
Terracottas	N/A		yes	PP	Aegean?	yes
Textiles	(various)	G/S	yes	BA	ubiquitous	yes
Timber	(various)	G/S	yes	BA	ubiquitous	
Tin	tin	G/S	yes	BA	Far East? West?	
Touch stone	(see text)	G		PP	Asia Min.	
Turmeric	<i>Curcuma longa</i>	G/S?		PP	Far East	
Verdigris	copper acetate*	G?		PP?	Levant?	
Wheat (<i>semidalis</i>)	<i>Triticum durum</i> *	G/S		PP	Levant	
Wine	(various)	G/S	yes	BA	ubiquitous	yes
Woad (*Indigo)	<i>Isatis spp.</i>	S?	yes	BA?	ubiquitous?	
Wool	wool	G/S		BA	ubiquitous	

Key to Table 12.2:

-Under the heading “Text”: G = Greek textual attestations; S = Semitic textual attestations.

-Under the heading “Arch”(aeological): “yes” indicates archaeological evidence.

-Under the heading “Date”: “BA” indicates the Bronze Age ending ca. 1200 BCE; “IA” indicates the early Iron Age (ca. 1200–600 BCE), and “PP” indicates the Persian period (ca. 600–300 BCE).

-Under the heading “Cop’d”: “yes” indicates evidence for imitations of this item.

economic parlance implies particular types of undifferentiated things that are completely alienable, often fungible, and generally exchangeable between private parties within a market. Here the existential purpose, and indeed definition of ‘commodity’ is compressed into that market-based moment of exchange. In the seminal volume, *The Social Life of Things*, both Appadurai (1986b) and Kopytoff (1986) drew attention to the limitations of this perspective, underscoring the complexities of the process of commodification and the transitory nature of the commodity state. Delineating trajectories from production to consumption, both scholars illustrated how a single object has the potential to pass through multiple modes of exchange, and thereby be diverted into multiple, but sequential states, including, for example, that of gift, commodity, and heirloom. As a corollary, some items are rarely or never commodified: *we* abhor the commodification of persons or body parts; other cultures have been less put off by this. The commodity state is then socially and culturally contingent and is expressed primarily through a limited range of modes of exchange. Thus in opposition to contemporary economic parlance, Appadurai and Kopytoff propose that ‘commodity’ is not a static ontological category, nor an undifferentiated mass, but rather a process, generally centered around a single item. While recognizing the importance of these observations, and the dynamism of commodity pathways and diversions, for our purposes here, we must freeze all the items in my list into something like the current economic understanding of the commodity state, assuming that most, if not all the items under consideration followed similar ‘biographical’ pathways and were produced or processed primarily for monetary exchange in the *emporia* and *agoras*. These assumptions are necessary because of the continued importance of gift and other forms of exchange in the Persian period, and our inability to differentiate between items appearing in long-distance trade that may have been shifted about more as gifts than as commodities. These assumptions also necessarily elide the additional complexities of the development of markets and monetization, particularly in the sixth century, and the impact that these developing structures of exchange have on our approach to defining these items as commodities.

Furthermore, by focusing exclusively on private market exchange, I also avoid the problem of the state as an economic actor and agent in the movement of goods. As the Old Oligarch reminds us (2.7), there were a number of items in Athens, for example, those related to the construction of triremes – timber and pitch especially – that could be of strategic importance to a state and thus attract public attention in ensuring continuous supplies, and even curtailing supplies to competitors. Because none of the items in my list were of such strategic or political importance, as, for example, Macedonian timber or Black Sea grain, to warrant special attention to ensure their continuous supply to Athens or other *poleis*, an active role of Aegean states in Persian period

Levantine–Aegean trade appears minimal.¹⁰ Nevertheless, we should note that any role of the state in exchange must play into a definition of ‘commodity’ since the structure of exchange can be altered by various degrees of state involvement through the (ab)use of a state’s economic and military power to acquire goods. In such cases, ‘commodity’ may not be the right term for items like Macedonian timber baulks acquired by imperial Athens, which might fall somewhere in the spectrum between, for example, commodity and gift, or commodity and booty.¹¹

With a workable understanding of commodities per se, we next consider their analytic categories. Here we are faced with two types of problems. The first is how best to enumerate commodities, as I have done in [Table 12.2](#), in order to develop a sense of the scope of the trade, and the second concerns the nature of the trade from the angle of consumption and social registers, particularly who is buying what and for what reason. The social biography of things described by Appadurai and Kopytoff is concerned, rather than with classes or types of objects, with single objects primarily, an analytical category that is not well suited to our discussion here. For many of the items in my list, like spices, fuller’s earths, and grain, it makes little sense to speak of single objects since a single grain or granule is entirely fungible. While this is less the case with some manufactured items, like coins and some ceramics, still there is a degree of fungibility with coins, for example, that is not present with unique statues, painted vases, silver plate, or tapestries. This spectrum of fungibility, if we can speak of such, complicates how we categorize and enumerate commodities. In general, those items that stand at both ends of the spectrum, the most and least fungible, are the easiest to enumerate: a measure of barley, for example, or a worked silver krater. Those that inhabit the middle portions of the spectrum pose greater problems. Wine, for example, is in some situations fungible – cheap table wine is cheap table wine no matter the brand – but wine is still extensively differentiated by place of origin, age, and color. We can, as I have done in [Table 12.2](#), list wine as a single class of commodity, but with the understanding that there may be dozens of underlying types of wine, each of which could be considered a single commodity in its own right. In [Table 12.2](#) therefore lists 125 items, some of which are singular, like antimony, some of which represent classes, like wine; if we include the differentiated types within the classes in our count, the minimum number of singular commodities appearing in Levantine–Aegean trade is roughly 200.

Finally, we all too frequently speak of commodities as either luxuries or staples. This binary system of categorizing commodities goes back at least to the time of Plato, if not earlier. As the philosopher notes, necessities (*anagkaia*) are those goods that sate the necessary appetites/desires (*anagkaioi epithymiai*, *Resp.* 558 D), such as hunger and the desire for warmth. Unnecessary appetites or spendthrift desires (*analôtikai*, *Resp.* 559 C), which Plato includes in his unflattering characterization of the democratic man (*dēmokratikos*, *Resp.* 559 D), are

those which seek varieties of food and unnecessary things, like *orientalia*, and in the end are harmful to the body and soul (*Resp.* 559 B-C). Plato's sneering moralizing on 'unnecessary things' persists to this day; 'consumerism,' which many would define as the thoughtless pursuit of gratifying acquisitive appetites, carries few positive connotations. In his *Laws*, Plato specifically marks two groups of commodities as unnecessary, frankincense and other foreign spices, and marine purple and other non-indigenous dyes; these goods are strictly forbidden to be imported into his ideal city (847 C). To be sure, all these items appear on my list.

This approach to luxuries and staples permeates most discussions of commodities in trade, including those concerning Levantine-Aegean trade, which has been branded by Miller (1997: 65) among others, a trade in luxury goods. However, this simple binary of luxury and staple has its flaws; as has long been recognized the relationship between the two is far more complex and fluid than some, like Plato, might admit.¹² Appadurai (1986b: 38) has lucidly suggested another way to define the categories:

I propose that we regard luxury goods not so much in contrast to necessities (a contrast filled with problems), but as goods whose primary use is *rhetorical* and *social*, goods that are simply *incarnated signs*. The necessity to which *they* respond is fundamentally political. Better still, since most luxury goods are used (though in special ways and at special cost), it might make more sense to regard luxury as a special "register" of consumption ... than regard [it] as a special class of thing.

He goes on to list the five identifying signs of this 'register' which include restriction to elites, complexity of acquisition, the signaling of complex social messages, and specialized knowledge of proper consumption. The usefulness of this model is that the focus is shifted to the (social) consumption of a commodity rather than its presumed inherent production or exchange value. This allows for greater fluidity in commodity typologies since it is not the commodity itself that determines its status, but rather the specific geographic, temporal, and social context in which it is consumed. Although not explicitly stated by Appadurai, the concept of registers of consumption also implies not just the binary types, luxuries and staples, but a multiplicity of registers, however we choose to call them, as, for example, the awkward 'semi-luxury.' This, as we shall see, is important for determining who was buying what and for what reason. We now can turn to my list.

THE COMMODITIES

As noted, in Table 12.2 the column 'Date' gives the earliest era when the commodity appears in our evidence in Levantine-Aegean trade. Given the

limitation of our sources these dates are, for the most part, only rough approximations;¹³ also approximate are the numbers of commodities appearing for the first time within a certain era. Nevertheless, with this in mind, there seem to be certain *impressions* of chronological patterns and development discernible.¹⁴ First, about 40 percent of the commodities from all regions found in Persian period Levantine–Aegean trade are known from the Bronze Age trade.¹⁵ Given the quality of the evidence for and the seemingly large scale of Bronze Age exchange, this should come as no surprise.¹⁶ Of these the ‘ubiquitous’ commodities, those originating from both the Levant and Aegean simultaneously are the largest group, followed by those from the Levant and Aegean respectively. Arabia and the Middle East seem to have supplied only sesame, marine shells, myrrh, and calamus, while the Far East provided ebony, indigo (?), ivory, lapis lazuli, and tin. Through the course of the Iron Age era immediately after, fourteen commodities are added to the Bronze Age roster,¹⁷ including items from Arabia (e.g., frankincense) and more spices from the Far East (eaglewood, sandalwood, nard). Furthermore, certain metals (e.g., iron, silver, lead) begin to make more of an appearance in trade.

When we turn to the Persian period, however, we see an appreciable jump in the numbers of ‘new’ items: a total of forty-two. Once again the Far East and Levant provide major new additions to the total number of commodities in trade,¹⁸ the Middle East and Arabia only a handful, with the rest coming from the Aegean, Asia Minor, Egypt/North Africa, and the ‘ubiquitous’ category.¹⁹

While this impression of an increase in the number of commodities in general circulation likely reflects one aspect of late Archaic–early Classical economic expansion in the Aegean and Mediterranean generally, some caution must certainly be exercised. The source material for the Persian period is far richer than it is for earlier periods and so might distort our perceptions. For example, one apparent pattern for Persian period additions is the increase in the numbers of pigments and chemicals, which might reflect an actual increase in the trade of these industrial items,²⁰ but could also mean that later scientific writers, like Theophrastus, were more apt to mention the commodities than was, say, Homer. Even so, for a fair number of these commodities – cats, cotton, peacocks, rice, silk – there is little doubt that they were introduced to Levantine–Aegean trade during the Persian period.²¹ Furthermore, at least one heavy and bulky item, marble, appears for the first time in the east-bound trade; the few Lebanese cedar baulks that made it to the Aegean also appeared no earlier than the Persian period.

Greater precision in the chronology of Levantine–Aegean commodity movements within the Persian period is more difficult to discern. A small number of items – amomon, cardamom, camel’s thorn, costum, lykion, and nutmeg – may not have appeared until the very end of the period. Other commodities, mostly manufactured items subject to the whims of fashion like

certain types of clothing and perhaps core-formed glass bottles, may have disappeared around the same time, if not beforehand. Making allowances for the nature of the evidence, if we consider the list of items in Table 12.1 as a possible snapshot of items in circulation at any given moment during the Persian period, it is clear that a far greater number, roughly 3:1, were moving westward compared to those moving east. The ratio of east:westbound commodities is large enough to appear quite significant,²² but what this figure actually represents is difficult to determine. While it may be tempting to use these figures to posit some sort of trade imbalance, that is, imports of greater value than exports, it must be remembered that what is quantified here is class or item, not value equivalencies or volume.

Although the Aegean's exports were not as numerous as the imports from the east, 70 percent of what was exported was either manufactured or heavily refined: fineware, iron, lead, finished marble (e.g., *stelai*), silver, sugar of lead, and terracottas.²³ A much smaller number of manufactured goods – mostly glass and alabaster vessels and processed metals and pigments (Egyptian Blue, copper, tin) – were traded west.²⁴ The bulk of the items in westbound trade were raw or semi-processed: nearly one third of these goods are spices; pigments, dyes, and other chemicals comprise about one-sixth of the total; the remainder consists of miscellaneous materials like raw ebony and ivory. The Aegean's raw and semi-processed exports to the east, if the metals are excluded, were quite limited: amber, fuller's earths, unfinished marble, and styrax.

Raw and semi-processed implies that most of these items were destined for use in industries elsewhere. Pigments, dyes, and chemicals were likely intended for use in textile production,²⁵ blocks of ebony and uncarved ivory for furniture (Dem. 27.9–11) and trinkets.²⁶ Combined these industrial goods make up about 25 percent of the total numbers of commodities in westbound trade, which is roughly the same percentage for the eastbound industrial goods.²⁷ Although 25 percent is a significant proportion, it is difficult to know what to make of it. Raw and semi-processed goods, as the Uluburun shipwreck amply illustrates,²⁸ were present in Levantine–Aegean trade from an early date; and as might be expected, many of the same raw materials, like ebony and ivory, are present during the Persian period as well. While a number of new pigments seem to appear in Persian period trade, their apparent novelty, as mentioned earlier in this chapter, could be due to faulty (textual) evidence. The only raw material we can be certain did not appear in the trade in large volume before the Persian period is Aegean marble, one of the few indigenous raw commodities of which there was an abundance.

Besides the raw and semi-processed goods, we are left, since the remaining types of goods do not form large cohesive groups, looking at spices from the east, about 33 percent of the total items, and the manufactured goods from the west, about 70 percent of the total, at the core of the Levantine–Aegean trade.²⁹

One thing that is immediately striking about these observations is that those goods generally considered to be important high-volume commodities in internal Aegean trade – grain, wine, fish, and (olive) oil – do not appear prominently at all in Aegean-Levantine trade. Some quantities of wine and oil were shipped east and west, but on what appears to be a rather small scale; fish products cannot be found at all. What foodstuffs there were in this trade were mostly exotic types originating in the east: rice, sesame, dates, *semidalis*. Of these, the presence of rice seems minimal, while sesame, dates, and *semidalis* were used in the Aegean mostly for special occasions, like weddings, indicating their comparative rarity and expense.³⁰

One could surmise from this list that while it is lengthy, the actual volume of goods in trade and thus its overall scale might not have been all too grand, reflecting the traditional approach to low-volume, high-value luxury trade. A couple of points should caution us from reaching this conclusion too quickly, however. First, Thucydides tells us that in the second year of the Archidamian War (430/29 BCE), the Athenians sent out a squadron of six triremes to Caria and Lycia in order to collect money, and to stop Peloponnesian sea-raiders from molesting merchant ships coming in from Phaselis and Phoenicia (Thuc. 2.69). Clearly, Levantine-Aegean trade was recognizably large and important enough to the Athenians to warrant special attention on at least this one occasion. Secondly, the number of Archaic and Classical coin hoards found throughout Egypt and the Near East, especially those containing Athenian owls, indicates there was an appreciable silver drain from the Aegean towards the east, presumably at least in part as payment for many of the goods moving westward.³¹ Although, in general, Levantine-Aegean trade was not big on the basics, like oil, wine, and grain, still it contained items that were apparently in high demand, which was then presumably met with adequate supply.

DISCUSSION

To be sure, the desiderata for this list of commodities are as lengthy as the list itself. To truly grasp the nature of Levantine-Aegean long-distance trade, we should like to know with greater precision when certain commodities were introduced to the trade, the annual amounts shipped and prices, what proportion of the items in transit were in a commodity versus a gift state, what proportion of the items gravitated toward the luxury end of the consumption spectrum, and so on. But even with the rough and noisy data as we have them, we are able to draw some conclusions about these commodities, especially how they relate to the notion of self-sufficiency.

As noted, there seems to be little question that the Greek world, particularly that portion of it with access to the sea in the Aegean and in the West, experienced significant intensive and extensive economic growth in the second half

of the sixth century, which then carried through to the fifth and fourth centuries as well. While the reasons for this growth are highly complex, as Morris, Bresson, and Harris have demonstrated, the rise and expansion of markets and new monetary instruments, like coinage, were among its manifestations.³² It is not hard to imagine that whatever networks and connections already existed across the Mediterranean and beyond were subsequently broadened and expanded at this time, extending their reach and thereby the channels through which goods flowed.³³ At one far western end of these networks, for example, the mid-sixth century ruler of Tartessus, Arganthonius, gave money to the Phocaeans, his trading partners, to help build city walls around their Ionian home thousands of kilometers away (Hdt. 1.163); at another far end, the amount of Athenian silver flowing into the south Arabian kingdoms of Saba and Qataban as payment for frankincense and other spices fueled a massive series of imitative owl coinages there beginning around the end of the fifth century and gaining momentum in the fourth.³⁴ With or without a character like Polycrates, tyrant and *bon vivant* of Samos, to spur things on as noted earlier, markets in the Aegean, and elsewhere, were filling with more and more *things*, offering greater variety and choices. The number of 'new' commodities in my list would seem to confirm this.

As economies expanded and markets filled, there appeared, arguably for the first time in western history, that peculiar, discerning individual – the consumer – who, with money in pocket, struggled to balance good sense and recklessness in a sea of beckoning products. Davidson (1997) and Foxhall (1998a; 2005) have already charted for us the consuming passions and heartfelt desires of the Archaic and Classical consumer, rightly drawing our attention to the nexus of ancient emotions and commodities. As they have deftly shown, the consumption of things, novelties especially – trinkets, clothes, food, what have you – elicited powerful, delighted responses, an act that the fourth century philosopher Aristoxenus (fr. 50 Wehlri) recognized as one of life's greatest pleasures: 'Since novelty has a mighty power to make pleasure seem greater, it is not to be ignored ... for this reason many kinds of food have been invented, many kinds of cakes, many kinds of incense and perfume, many kinds of garments and rugs, of cups too, and other utensils; for all these things do, in fact, contribute a certain pleasure.' These are pleasures that Aristophanes and other playwrights detailed as well. But we should not think that the delights of commodity consumption were restricted to just the elites, especially toward the end of the fifth century. By the time that coinage had become commonplace, markets established most everywhere, a concomitant 'democratization' of commodity access had also taken root.

Two passages in particular, both purportedly composed within a short period at the height of fifth-century Athenian imperialism and economic power, have attracted attention in this regard.³⁵ In Thucydides' version of Pericles' Funeral

Oration (2.38), he notes that ‘on account of the greatness of the city everything comes in from all the world, and for us it is as natural to enjoy the goods of others as it is to enjoy our own local produce.’ Similar links between Athenian power and pleasure in imports are expressed by the Old Oligarch (2.7): ‘it is because of their mastery of the sea that the Athenians have mixed with various peoples in different areas and discovered a range of festive practices. In consequence, what is sweet in Sicily, Italy, Cyprus, Egypt, Lydia, Pontus, the Peloponnese or elsewhere has all been brought together in one place because of the mastery of the sea.’ Athens in the 430s and 420s was a major *entrepôt*, and the range of commodities found there must have been extensive, but how much more extensive than other equally important *entrepôts*, like Syracuse or Carthage, is open to question. The Atheno-centric view of both Pericles and the Oligarch serve rhetorical purposes and obscure the fact that the Athenians, like many others elsewhere, were experiencing the benefits of a process that had begun before their empire coalesced and would continue after its collapse. There was, in general circulation all over the Mediterranean, an abundance of goods, and while some markets might have been better stocked than others, only the poorest and most remote likely had no experience of at least some small imports and foreign commodities. Both passages also strongly imply that it was not just the wealthy elites, those with plenty of spare tetradrachmas, who enjoyed these imports, but anyone with even a few hemiobols to spend who strolled the agora.³⁶

Some years ago, Braund (1994) took issue with the implication of mass access to luxury goods found in these passages, arguing that most ‘luxury’ imports would still be well beyond the financial reach of the mass of poor Athenians, and that the picture of a shopping utopia painted by Pericles was little more than an ‘Athenian mirage,’ a political panacea. While Braund is certainly correct to draw attention to the political messages of these passages, still we should question whether his view of mass access is correct.³⁷ There will always be goods occupying the highest luxury register, that are indeed well beyond the reach of the ‘average consumer’; such goods are designed to be that way, serving primarily as tools of elite social distancing: today’s Bentley coupe, Prada shoes, and Tiffany jewelry are cases in point. But not all imports, even those Braund considered luxury goods, like those listed in the Hermippus fragment noted earlier, were necessarily of the highest luxury register. Like the commodity state, the luxury register is dynamic, with items moving into and out of it depending on the immediate context. In late fifth century Athens, and no doubt elsewhere, a number of political, economic, and social forces converged that might have caused some of these imports to trickle down out of the higher registers, if in fact they ever occupied them to begin with.³⁸ Included among these converging forces was the Athenian sense of egalitarianism that generally discouraged the wealthy and other elites from engaging in displays

of conspicuous consumption, and also programs like pay for judging cases that put coins in the hands of even the poorest citizens (cf. Kallet 2007).³⁹ Even in the absence of sumptuary laws, social pressures might have limited the number of exclusive, top-register products on offer in the Athenian agora, while more spending power among a wider portion of the population could bring former 'luxury' goods within the reach of non-elites, at least for the occasional splurge. My point is that toward the end of the fifth century, in Athens if not elsewhere, consumers were to be found not just among the elite, but throughout all strata of society. For these consumers, markets full of imports had become more than just something to point up as a patriotic sign of economic and political hegemony, but an important part of an internalized, emotionalized, consuming way of life, something both Pericles and the Old Oligarch underscore. Here again, as I noted earlier, this bounty of imported and other goods in the agora contributed to a communal sense of wealth and well-being, even if all market goers could not afford all the goods all the time. Window shopping, as many today know, can be as satisfying, if not more so, than committing to an actual purchase.⁴⁰ But no such communal or individual joy can be had when the markets are depleted, or the goods monotonous.⁴¹

If indeed markets full of imports and common access to them had come to define part of the Athenian, and more generally Greek way of life by the end of the fifth century, any notion of a turn to complete communal self-sufficiency – a bleak world without the variety of imports – would not hold much appeal, except, of course, to the appetite-denying philosophical brood. In the real world, no such Platonic utopia could be achieved anyway except by extreme forms of coercion or duress; most markets had long since passed the tipping point where banning imports would be feasible, desirable, or even, from a fiscal perspective, prudent. The consumer had long since emerged out of the shadows of the Archaic age a powerful entity who grew still stronger over time. Once new products became lodged in his or her habits and expectations, these would be difficult to dislodge, even as he or she moved on to the next novelty. Arguably, this incessant ratchet effect in aggregate demand, ever increased but never decreased the scope of the goods that could be found in markets. In fact, the ubiquitous act of imitating foreign goods locally, whether coins, ceramics, textiles, even perfumes and spices, shows us how irrepressible the force of this demand could be; no one imitates, if no one is buying.⁴² States, for their part, quickly learned to harness this force for the communal good: import/export taxes were *a*, if not *the* major source of revenue for most Greek communities.⁴³

Thus caught in the ever-widening net of consumer demand, the commodities I have presented here are useful for thinking about the problem of long-distance trade and self-sufficiency. Arguably none of the commodities identified as imports in Levantine-Aegean trade were critically needed for sustaining life in, or to ensure the security of Aegean communities; and, indeed,

a number of them were banned from Plato's ideal city for being completely superfluous. Even so, enough people in enough Aegean communities clearly felt that these goods added significantly to their quality of life – whether propitiating the gods with Arabian frankincense, serving Mesopotamian sesame cakes at a wedding, or wearing clothes cleaned with Egyptian natron – to ensue their steady flow toward Greek cities from quasi-mythical lands far, far away.⁴⁴

Whether or not these indications of increasing types of commodities flowing in trade and greater access to them by non-elites amounts to the type of consumer revolution in the Classical Greek world that has been argued for the years 1650–1800 remains to be seen.⁴⁵ A great deal more work needs to be done on sorting commodities, communities, and consumers. In the meantime, however, we can conclude with some certainty that by ca. 400 BCE, much of the Greek world, and indeed much of the wider Mediterranean world, was experiencing happy times imports-wise. And in those places where the cold ideal of *autarkeia* bumped up against the warm reality of people's desires, we can be pretty well assured the Paphlagonian acorns won out.

NOTES

- 1 The Hermippus fragment lists twenty-four foodstuffs and manufactured items. In the same section where this fragment is preserved, Athenaeus (1.27d–28d) records additional lists by Antiphanes, Pindar, and Eubulus enumerating mostly manufactured goods, e.g., jars, pans, carts, beds, and processed foodstuffs like cheese, from various locales within and without the Aegean. For grocery-type lists, see Alexis (fr. 127 K–A; *apud* Ath. 4.170a): nineteen spices including sesame and silphium; Anaxandrides (fr. 41 K–A; *apud* Ath. 4.131d): ninety-nine things, mostly foodstuffs, but also myrrh and frankincense; Mnesimachus (fr. 4 K–A; *apud* Ath. 9.402f–403d): seventy-seven items, mostly foodstuffs, but also cassia, cinnamon, frankincense, myrrh, and storax; cf. Antiphanes (fr. 190, 206, 224, 236; *apud* Ath. 1.27d, 7.309d, 11.500e); Ar. *Ach.* 873–80; Menander (fr. 24 Kock; *apud* Ath. 4.146e–f; 11.484d). This list of lists is far from exhaustive; many more are found in Aristophanes and other fragments.
- 2 For example, the Catalogue of Ships in Homer (*Il.* 2.494–759) or Old Testament genealogies, e.g., Genesis 10.
- 3 The silver Sidonian mixing bowl given to Telemachus by Menelaus, for example, is the costliest and most beautiful of the things stored in his house (*Od.* 4.613–19).
- 4 Cf. Thuc. 2.38 and [Xen.] *Ath. pol.* ('The Old Oligarch') 2.7; both passages are discussed in more detail later in this chapter.
- 5 On the pleasures of consumption, especially the consumption of novelties, see Aristox. (fr. 50 Wehrli; *apud* Ath. 12.545e), quoted later in this essay. For a more recent appraisal of such pleasures, including the joy of shopping in antiquity, see Davidson 1997: 204 and Foxhall 2005. For spending idle hours in the agora see Lysias 24.19–20 and Isoc. 7.15.
- 6 Aristophanes coins the term *plouthygieia*, 'wealth-healthiness' to describe what the goddess Athena pours over Demos (i.e., the Athenian populace; *Eg.* 1091). Kallet (2003: 137–40) discusses this passage at length, underscoring Demos' transformation via access to luxurious trappings.
- 7 See Diod. Sic. 16.41.4 for another example of trade (*emporía*) bestowing *eudaimonia* on a city, in this case Sidon. On the abundance of the Athenian market see also Isoc. 4.42.

- 8 Morris 2004; 2005; 2009; Ober 2010a; and Scheidel 2010: esp. 440–2 with table 4, map the dramatic economic growth and increase in the standards of living in the Greek world of the sixth through fourth centuries BCE; Schaps 2004 provides a detailed look at monetization; and Bresson 2000; 2008, Harris 2002a, and Tandy 1997 trace the rise of markets in the Archaic and Classical periods.
- 9 <http://numismatics.academia.edu/PeterVanAlfen> (accessed 2 December 2013).
- 10 Thuc. 2.69, discussed at p. 000, is suggestive of some attention, at least protection for incoming ships, directed toward Levantine–Aegean trade by the Athenians, but there is no attention on the scale of that directed toward grain or timber, for which see Moreno 2007a and Bissa 2009.
- 11 Private raiding conducted against enemy cargo ships (cf. Thuc. 2.69) under some form of state sanction could well have brought in strategic items on a regular basis that then were sold to the state. See Herman (1987: 82–8) for gifts of mostly timber and grain by individuals to various *poleis*; cf. also the honors given to Archelaus, King of Macedonia, for, among other things, his gift of timber and oars to Athens in 407–6 BCE (*IG I² 105* = *ML 91*).
- 12 Berry's 1994 study, for example, explores the social and economic concepts of needs and luxuries, illustrating at length the fluidity in the concepts. See also Sherratt and Sherratt 1991; Foxhall 1998b; 2005; and Morley 2007: 39–43.
- 13 While I base the era in the Date column on the earliest textual or archaeological evidence for the items' appearance in Levantine–Aegean trade, I have sometimes made a guess as to which seems best to suit the evidence. For example, while there is archaeological evidence for pepper in Bronze Age Egyptian tombs, nothing yet points to Levantine–Aegean trade in the spice until the Persian period. Hence I give 'PP' in the column rather than 'BA.'
- 14 'Impressions' needs to be stressed; both the nature of the evidence – full of lacunae and chronologically vague – and the perils of quantifying this evidence make any results more hard and fast than impressions impossible.
- 15 51 out of the 125 classes found in Table 12.2.
- 16 The evidence for Late Bronze Age trade and commodities – archaeological and textual – is generally richer and more varied than it is for the Iron Age; the evidence also indicates that trade, however we define it for that period, occurred on a what appears to have been a large scale; see Sherratt and Sherratt 1991; Cline 1994.
- 17 From the Far East: eaglewood, nard, sandalwood, silk; none from the Middle East; from Arabia: frankincense; from the Levant: antimony, crimson; from the Aegean: silver, lead; from the ubiquitous category: iron, ochre, quartzes, raisins, slaves.
- 18 Amomon, beryls, bitumen, cardamom, cassia, cinnamon, corundum, costum, cotton, silk, nutmeg, pepper, pearls, rice, tumeric, azurite, camel's thorn, cedar, cinnabar, dates, greenearth, gypsum, malachite, verdigris, semidalis.
- 19 From the Aegean: fuller's earth, marble, styrax, sugar of lead, terracottas; from Asia Minor: lykion, touchstone; from Egypt/North Africa: balanos oil, castor oil, cats, natron; from the ubiquitous category: alkanet, lichens, salt, sulphur.
- 20 From the Levant these are: antimony, azurite, cinnabar, greenearth(?), gypsum, malachite, verdigris(?); from the Aegean: fuller's earth; from the ubiquitous category: alkanet, lichens, sulphur(?).
- 21 The lack of any combination of archaeological, visual, and textual evidence before the Persian period for these goods, plus the way they are discussed by contemporaries (e.g., Theophr. *Hist. pl.* 4.4.10 on rice; *Hdt.* 3.47 and 106 on cotton) makes it quite certain that these were Persian period introductions.
- 22 This is calculated from the total number of east to west goods, 54 (Table 12.1:A), and the total of Aegean to the east goods, 10 (Table 12.1:B) which gives an actual ratio of 3.35:1. I have not included the 'ubiquitous' goods or the Asia Minor and Egyptian goods in this figure; the addition of the ubiquitous category to each side does nothing for the final ratio,

nor do the addition of the Asia Minor and Egyptian goods, which also were travelling in both directions.

- 23 This does not include the items from the ubiquitous category (Table 12.1:E), e.g., arms, metal-ware, perfumes, textiles, and wines. Also, the distinction between some of these categories, e.g., manufactured and semi-processed is not easily determined. Wine, for example, is the product of an elaborate and even artisanal process. Is it then a manufactured product or semi-processed?
- 24 Again, this does not include items from the ubiquitous category (Table 12.1:E), like perfumes, textiles, and metal-ware, which no doubt appeared in westbound cargoes.
- 25 Bresson (2008: 150–4; 2016: 353–8) provides an overview of the use of these raw materials in textile production.
- 26 Industrial metals, like copper, tin, lead, and iron, could be included in this list; however, the amount of refining required to produce an ingot of copper, for example, warrants the inclusion of the metals under ‘manufactured’ rather than ‘raw or semi-processed.’
- 27 I use only the goods found in Table 12.1:A, B to calculate these figures. Only two raw industrial goods, fuller’s earth and unfinished marble, appear in the list out of the total ten, i.e., 20%. Once again, these figures do not constitute trade volume, but simply discrete commodity types.
- 28 See Bass 1997 for a detailed discussion of the raw materials found on the wreck.
- 29 Manufactured goods from the east are a cohesive group, forming ca. 9% of the trade, but are greatly overshadowed by the spices and so are not included in the ‘core.’
- 30 See van der Veen 2003 for the problem of ‘luxury’ foods.
- 31 For a study of ‘owl’ and other coin hoards in the east see van Alfen 2012b. The question of the mechanisms by which some Archaic and Classical Greek coinages appeared in Egypt and the Near East is contested: Picard 2011 and Tzamalīs 2011, for example, have argued that Persian tribute was the primary motor, while Kroll 2011 and van Alfen 2012b suggest commerce.
- 32 See note 8.
- 33 Sommer 2004 looks at Phoenician commercial networks in the Iron Age, while Malkin 2011 examines the nature and extent of archaic Phoenician and Greek networks across the Mediterranean. Peacock 2011 reconsiders Phoenician–Greek commercial connections as seen through the lens of Homer.
- 34 See Malkin 2011: chapter 5 for a recent reappraisal of Phocaeen activity in the west, and van Alfen and Bransbourg 2013 for a snapshot of archaic Phocaeen minting at home and abroad. For an overview of imitative owls in Arabia see Huth 2010; for a statistical analysis of Sabaeen and Qatabanian owl production see van Alfen 2010.
- 35 See especially Braund 1994 and Kallet 2007.
- 36 Ober 2010a and Scheidel 2010 both demonstrate how real wages and living standards in Athens in the Classical period, and by extension other parts of the Greek world, were sufficiently high to allow some discretionary spending by a reasonably large proportion of the population. Antiphanes, for example, in the *Timon* (fr. 204 K–A *apud* Ath. 7.309d) depicts Timon as being too stingy to even buy an obol’s worth of incense for the gods and goddesses; this shows that even the poorest Athenians could purchase at least small amounts of this commodity (my thanks to Edward Harris for this reference). Cf. also Foxhall 2005: 240 on the occasional consumption of ‘semi-luxuries’ by non-elites.
- 37 Berry 1994: 32 similarly argues that it is not possible, in a modern context, to ‘democratize’ luxuries, but this is due to his concept of luxury being those items found in what may be regarded as Appadurai’s highest register, and the function of those highest register items to maintain social distance between elites and masses. While I agree with Berry that those items in the highest register cannot, for a time, be ‘democratized,’ there could eventually be slippage, some items falling out, others welcomed in. I argue here against Braund’s apparent efforts to freeze this dynamic and place most, if not all imports in the highest register.

- 38 For a discussion of this type of ‘trickle down effect’ see van der Veen 2003: 409–10 and Foxhall 2005.
- 39 It is worth noting as well that Athenian society especially in the late fourth century was, according to Kron 2011, marked by a high degree of economic egalitarianism. His study of Athenian wealth distribution demonstrates that despite extremes of wealth and poverty the bulk of Athenian male citizens were living far from a hand-to-mouth existence. Kron 2011: 132 calculates the median wealth per adult male to be 2,451 drachmas.
- 40 Cf. Lys. 24.20.
- 41 A quote attributed to Gloria Steinham about (former) East Germany in the early 1990s captures the essence of this joy: ‘First we have a revolution and then we go shopping.’
- 42 See the collected papers in Lawall and van Alfen 2011 for the (ab)uses of imitative commodities in the Greco-Roman world.
- 43 See Bresson 1998.
- 44 Parker 2002 explores the role and discourse of distance in the consumption of Indian commodities, including many noted here, in the Roman period.
- 45 Although Clark 2010 calls into question some of the fundamental tenets of the (presumed) consumer revolution of 1650–1800 in England, he notes ‘[s]omehow consumers, without much increase in wages, were consuming a whole cornucopia of new objects.’ New consumption patterns, along with new commodities, also seem to obtain for the Persian period, the underlying economic and social structure of which needs further analysis.

TOWARDS A GENERAL MODEL OF LONG-DISTANCE TRADE

Aromatics as a Case Study

John K. Davies

I

Many of us of an older generation inherited in our youth a specific picture of post-Mycenaean Greece. It is a seductive one, since it is sketched by most extant Greek literary texts, from the epic and lyric poets consistently until Aristotle, and is given depth and shading by a modern scholarly tradition which largely respects their values and reflects their preoccupations. It portrays a language group of Greek speakers initially fragmented geographically within a land- and sea-scape of scattered settlements, gradually crystallising into larger units and expanding its presence along much of the Mediterranean littoral, but doing so by maintaining and solidifying a socio-political institution, the *polis*. Although supra-*polis* institutions, of greater or lesser longevity, emerged and came to wield some powers, they were mostly regarded askance, and for that and other reasons were insufficient to generate anything approaching a lasting international order in the Archaic and Classical periods. As a result, for the sake of basic communal survival, and irrespective of wide variations between *poleis* in power, in population size, and in the importance accorded to each element of the basic internal triangle of powers (magistrates, Council, and Assembly), *polis* systems and values had to continue to place great weight on asserting and maintaining the maximum possible degree of *polis* independence, whether governmental, legal, cultic, or economic. Although imports were

acknowledged to be necessary, they tended to be seen – at least by would-be opinion-formers – more as a necessary evil than as a positive contribution to the quality of life.

That picture conceals a two-level underlay of contrasting patterns and of much wider geographical dimensions. The upper and more visible level is sketched by the Greek geographers from Hecataeus to Strabo, who described that same Mediterranean littoral and its hinterland with increasing accuracy and detail. Similarly, the historians from Herodotus to Poseidonius made it part of their business to report on distant peoples and their activities, just as the scientific writers from the Hippocratics to Theophrastus set themselves to describe systematically this or that component of their culture from plants and medicaments to stones and agrarian techniques. Concomitantly, the evidence of Athenian inscriptions and speech-writers shows us the grain, timber, and other raw materials which her population and her fleet required and had to bring in from abroad.¹ This upper-level underlay reveals to us by 500 BCE a far wider geographical world in perpetual and purposive (although often violent) motion, transporting persons and commodities as well as ideas and techniques, and revealing connexions of unexpected kinds.

Yet there is a lower level still, of much greater antiquity and even greater extent, which for the historian of Classical Greece has largely remained hidden behind outmoded but powerful academic boundaries: that of the long-distance – indeed sometimes transcontinental – movements of commodities across Eurasia and beyond which gained in intensity in the Late Neolithic.² They had been enabled by human activity and outreach such as the exploration of the Alpine valleys and passes which is so vividly documented by the death of ‘Oetzi’ in the thirty-third century BCE,³ and they survived whatever disruptions are now to be attributed to the post-1200 BCE *oikoumene*⁴ to give the Mesopotamian-Mediterranean world of the Early Iron Age a skeleton framework of communication by land and sea. That framework could therefore be exploited, directly or via intermediaries, by those – Egyptians, Assyrians, Phoenicians, Anatolians, Greeks, Celts, and others – who had an interest, whether as principals or as persons acting on behalf of others, in procuring or transmitting commodities, especially those that had few and remote places of primary production. Random instances known to me include the traffic in obsidian, whether from Eastern Turkey, Sardinia, or the Lipari Islands, from even the tenth millennium BCE,⁵ the traffic in lapis lazuli from Badakhshan in Afghanistan and elsewhere to Assyria and beyond,⁶ the wide distribution within the British Isles of polished stone axes from Langdale during the nineteenth century BCE,⁷ the exchange of textiles and tin from (or through) Ashur with silver and gold from (or rather through) Kanesh in central Anatolia, also in the nineteenth century BCE,⁸ the traffic in amber from the Baltic coast via various routes and networks to the head of the Adriatic sea,⁹

or the trans-Saharan salt-trade of Herodotus' time which the domestication of the camel had made possible.¹⁰

Examples can undoubtedly be multiplied. To list them and others is not to impute stability, still less an incremental growth, for all such traffics were vulnerable to disruption or to shifts in supply or demand, several in the preceding list enduring for less than a century. Rather, it is to claim that throughout the period within the purview of the present volume a shifting range of such long-distance traffics will have been functioning, mostly below the political radar of the *poleis* and therefore better documented by physical survivals than by written sources (although the Assyrian trade with Kanesh is an exception). For understandable reasons such traffics – whether carried by land or by sea – tended to be of commodities which had a high value: weight ratio, and were likely to have been transported in stages through a sequence of handlers rather than directly from origin to consumer. They cannot be assumed to reflect any one pattern of exchange, but they do share the key characteristic that the area of production lies well outside any political or patronal or military 'reach' which the consuming parties or regions might have been able to deploy: some mechanism other than force has therefore to be invoked or hypothesised in order to account for the traffic.

This chapter¹¹ reviews the evidence – from Greece *only* – for one such long-distance traffic, that of aromatics from Yemen to the Mediterranean, as a case study. Its format requires a word of explanation. Much of the scholarly study of the subject has used the literary and archaeological evidence for the Nabataeans as the basic framework of description.¹² That choice is wholly intelligible in the light of the weight of information about them as carriers as well as of the romantic attractiveness of Petra as the Nabataean capital. However, the choice is misleading, for the Nabataeans were late-comers to a traffic that had begun centuries previously and had already involved Egyptians, Assyrians, Edomites, Phoenicians, Babylonians, Minaeans, and Sabaeans if not others. In any case, any study of it has to begin from the basic moving force of the traffic, the effective demand for aromatics from all over the Old World, so that what matters most is to identify that demand and to describe how that traffic worked in response. Unfortunately, to fulfil that task satisfactorily entails crossing boundaries which are as much scholarly as they are geographical. Apart from the physical evidence of sites and artefacts (a fractured universe in itself), our written information comes in clusters which are divided by interest (botanical, geographical, politico-military, ethnographic), by language (Egyptian, Greek, South Arabian, Akkadian, Aramaic, Hebrew, Latin), and by chronological period from the Bronze Age to the sixth century CE. Rare indeed is the scholar who has direct access to all:¹³ I am very far from doing so, and acknowledge my deficiencies. What follows here will therefore be a derivative sketch, will mainly focus on the (in Greek terms) Archaic and

Classical periods and on Greek-language sources, and will not attempt to trace in detail traffics in aromatics which followed other routes than that towards Greece, let alone traffics in other commodities. It will however attempt to knit the various clusters of information together within a descriptive-interpretative framework, and to do so in such a way that systematic comparisons can be made with other traffics.

II

In itself the word 'aromatics' is a vague term that encompasses a wide range of primary materials, the commoditisation¹⁴ of many of which goes far back into the Bronze Age. No even approximately complete list will be offered here,¹⁵ since while many of them were available regionally, or at least within the broader Egypt-Anatolia-Mesopotamia triangle, the long-distance traffic which is the subject of this paper was generated by certain species of *Boswellia* and *Commiphora* which were indigenous to, and confined to, certain regions of South Arabia and the Horn of Africa.¹⁶ The former area in particular (present-day Yemen) was called Eudaimon or Felix in antiquity for good reason. Its climate and geology had allowed not just Bronze Age agricultural development but also, well before ca. 2000 BCE, the creation of an irrigation economy, the construction near Mārib of what has been called 'the greatest technological structure of antiquity',¹⁷ and the adoption by the eighth century BCE if not earlier of a version of an alphabetic script for the four closely-related languages (Sabaic, Minaic, Qatabanic, and Hadramitic) used in the region.¹⁸ Whatever economic effect the traffic in aromatics had on the area was therefore an add-on to a long-established agrarian economy.

That traffic is best viewed initially from the vantage point of the late fourth century BCE, since by good fortune a convergence of information from various Greek literary texts provides three clear pointers, each from a different stage of the route, to the structure of the traffic as it then functioned. We begin in Yemen itself, since unnamed informants,¹⁹ perhaps of the immediate post-Alexander years, provided Theophrastus with material enough to compile two major sections of his *Enquiry into Plants*, 9.4 on frankincense and myrrh and 9.5 on cinnamon and cassia. That he describes in close detail the trees and the processes of extrusion of the gum, and cites the regions of production as Saba, Hadramyta, Kitibaina, and Mamali (9.4.2 and 5) inspires confidence, so that there should be some substance in his further report that:

the whole mountain range, they said, belongs to the portion of the Sabaioi, for they are the proprietors and are honest in their dealings with each other, so that no-one keeps guard. Hence they said that they took away quantities of the frankincense and myrrh, put them in their ships,

and sailed away. They also reported another thing which they said they had been told, that the myrrh and frankincense from everywhere were deposited in the Temple of the Sun. This temple was by far the most sacred possession of the Sabaioi of the region, and was guarded by certain armed Arabs. When they bring it in, each man piles up his own produce of frankincense and myrrh, and leaves it with those on guard. On the pile he puts a tablet with a statement of the number of measures and of the price at which each measure should be sold, and when the merchants come, they look at the tablets, measure out the price of whichever pile pleases them, and leave the payment at the place whence they have taken the goods. Then the priest comes, takes one third of the price for the god, and leaves the rest safe for the proprietors when they come to collect it.²⁰

The account was therefore already second-hand when it reached Theophrastus, and might be thought to echo Herodotus' account (4.196) of Phoenician silent trade on the West African coast too tidily for comfort. Yet its components are plausible – the multiplicity of producers; the designation of a central place as an *entrepôt* or exchange-hub; the use of a temple as that central place, thereby placing the goods under the protection of a god; the addition of a human guard in case the god's protection was ineffective; the cut of the paid price taken by the priest for that use; the total disjunction between producers and merchants; and the basic literacy required by both contracting parties.

The second panel of this late fourth-century triptych can be given the precise dramatic date of 312 BCE, for in that year Antigonos Monophthalmus launched a campaign against the Nabataeans, who thus appear for the first time in Greek sources.²¹ By then, on the evidence of Diodorus' source Hieronymus of Cardia, they were clearly well-established in southern Jordan and the Negev, and had a centre of annual assembly at or near 'a certain rock', which may or may not be the later site of Petra itself²² but cannot be very remote from it. The campaign itself, conducted by Athenaeus, one of Antigonos' generals, was a failure,²³ as also was a follow-up conducted soon after by Antigonos' son Demetrius (Diod. Sic. 19.96.1–98.1), but Hieronymus took the historiographical opportunity to describe the region, its products, and its people. He described them as nomads (Diod. Sic. 19.96.2), whose 'custom is neither to plant grain, set out any fruit-bearing tree, use wine, or construct any house; and if anyone is found acting contrary to this, death is the penalty' (Diod. Sic. 94.3), the explanation given being that to do so involves subordination to the powerful (i.e., by having to pay tithes or rents) (Diod. Sic. 94.4 and 97.4).²⁴ He mentions sheep and camels and a diet of meat and milk and uncultivated plants as well as pepper and 'the so-called wild honey from trees',²⁵ and he also describes in some detail their expertise in making waterproof cisterns (19.94.6–7). Briefer, but for the present exposition more pertinent, is his description of

their *panegyris*, 'at which those of the region are accustomed to travel to sell goods or to buy useful articles, leaving on a certain rock their possessions, the old men, children, and women' (Diod. Sic. 95.1-2).

It all reads as a text-book description of self-sufficiency, assisted by a remarkable ability to deter invaders. However, it has to be read sceptically, not so much because of the risk of ethnographic cliché²⁶ as because Herodotus reports 'the Arabs',²⁷ although not formally subject to the Achaemenids, as nonetheless giving the king an annual 'gift' of 1,000 talents of frankincense.²⁸ Consistently enough, Athenaeus' campaign of 312 initially captured 'most of the frankincense and myrrh and about 500 T of silver' (Diod. Sic. 19.95.3), which the Nabataeans recaptured (19.96.1), just as they were later able to fend Demetrius off by providing 'the richest of the gifts they had' (19.97.6), including 700 camels.²⁹ Not surprisingly, therefore, already in 312, on Hieronymus' account, the Nabataeans 'far surpass the other [Arabian peoples] in wealth although they are not much more than 10,000 in number, for not a few of them are accustomed to bring down to the sea frankincense and myrrh and the most valuable kinds of spices, which they procure from those who convey them from what is called Arabia Eudaimon' (19.94.4-5).

The third panel of the triptych is a miniature. Alone of the Alexander historians, Plutarch preserves the story that in autumn 332, after his capture of Gaza, Alexander avenged a rebuke for extravagance from his former tutor Leonidas by sending him 500 talents of frankincense and 100 talents of myrrh from the booty obtained in the sack of the city.³⁰ Given the figures already set out, such quantities are credible, and imply that the total haul of such commodities from the city will have been far larger. Hence, although there will no doubt have been other transfer points on the Mediterranean coast for the traffic, and although other areas of consumption will have been supplied by other routes, it is a safe inference that by 332 Gaza had an established role as a (main?) Mediterranean port for aromatics – a role that, notwithstanding severe intervening disruptions, it was again fulfilling in the time of the Elder Pliny.³¹

The picture of the traffic which emerges for the late fourth century BCE is clear enough. There was an initial node, or gathering point for the produce, later (and perhaps already) located in the Hadramawt at the royal city of Šabwa, the transactions being managed as described by Theophrastus. The produce was then carried northwest (but not by Nabataeans), presumably along some version of the trail which was later marked out into sixty-five stages,³² and presumably by the camel caravans which are explicitly attested (see discussion later in this chapter), whether by the 'direct across' transit mode as described by Geertz³³ or by the 'along the line' pattern theorised by Renfrew. 'Petra' formed a second node, where the Nabataeans themselves took over the carriage down to the sea (thus Hieronymus),³⁴ whether to Gaza or elsewhere. Whether 'Petra' also served as a 'junction', other caravans proceeding thence

north along the King's Highway toward Damascus or west toward Memphis, is not determinable.

That picture, clear but limited, provides a vantage point from which the enquiry can move outward in a number of directions. Direction (A) looks forward in time and westward in space, toward the changed balance of demand that the increasing wealth of central Italy generated from the late third century BCE onward. That permits a focus on the Nabataeans and toward their achievement in cornering the traffic and protecting it against competition for several hundred years, until Roman investment in Red Sea infrastructure (on a foundation laid by the Ptolemies)³⁵ allowed Egypt-based traders to by-pass the overland caravan route and to obtain direct access by sea not just to the Hadramawt but well beyond, to India, Sri Lanka, and the African coast. This track is already well-researched and will not be pursued here.

Direction (B), which will also not be pursued here, looks northward and eastward, toward the evidence for effective demand for the aromatics of Yemen from Mesopotamia and India and from even further east.³⁶ Direction (C) does the same for the various civilisations of the Mediterranean, a task which is wholly impracticable here: [section III](#) will review mainly that evidence which concerns Greece and precedes the epoch of the triptych reported above for the late fourth century BCE. Direction (D), presented in [section IV](#), will use the evidence to construct a model that might be applicable to the transits of other commodities.

III

The first approximately datable evidence for the use of south Arabian aromatics in Greece dates from the turn of the seventh and sixth centuries BCE, a date by which their use had already had a very long past elsewhere. It went back at least to the third millennium BCE in Egypt, access being gained by both Nile and Red Sea. That traffic, which presents major problems of its own that will not be broached here,³⁷ lost its hitherto exclusive access to such aromatics when the so-called Incense Road overland from Yemen towards Jordan became a viable route. The period of its development,³⁸ and also that of its northbound continuation, the 'King's Highway' from the Gulf of Aqaba to Damascus,³⁹ have been much debated. For present purposes it is sufficient to identify as a *terminus ante quem non* the fundamental technological advance represented by the use of the camel as a draught animal. That innovation, to be explicitly distinguished both from initial domestication⁴⁰ and from use in warfare,⁴¹ was what made long cross-desert transits possible and is likely to have been long-drawn-out and highly variable by region. The thirteenth or twelfth centuries BCE are now being commonly seen as the earliest likely period of draught use,⁴² but specific evidence is not available until ca. 750 BCE, when a

caravan of 200 camels from Taymā' and Saba (Yemen) itself was arrested by a king of Suhu at Hindanu on the middle Euphrates for evasion of tolls.⁴³ Just as the list of its merchandise – myrrh, wool, iron, alabaster, and dyed cloth – vividly reveals how multi-purpose such caravans could be, so too the location of the incident presupposes that the use of the Incense Road (or rather roads) from Yemen northward was well established. By then, too, the Assyrian conquest of Syria and the Levantine coast was well under way, and created a system which prevailed with remarkable stability until Alexander and beyond. In contrast to the reduction of Damascus and Tyre to the status of tributary states, this system refrained from coercing the nomad Arabs into the provincial structure, and instead provided 'protection'⁴⁴ at the considerable cost of 'gifts' which are periodically recorded as being provided by Arab rulers (first queens, then kings):⁴⁵ concomitantly, osteological evidence suggests a sharp increase in camel use in the Jordan-Negev region during the *pax Assyriaca* of the late eighth and seventh centuries BCE.⁴⁶ The only interruption to the system was due to Nabonidus, whose extraordinary and much-debated ten-year residence at Taymā' in the 550s and 540s⁴⁷ must have placed the inhabitants of the region under direct regal control, no doubt for fiscal purposes, but Persian overlordship restored nominal independence (footnotes 27–28), which Antigonus in effect continued.

The comparative stability engendered by the establishment of this system had three visible consequences. First, it provided the ruling power of Mesopotamia (whether Assyrians, Babylonians, or Achaemenid Persians) with a lavish supply of aromatics, such that Herodotus could report 1,000 talents of frankincense being consumed annually at the great temple in Babylon (I.183.2). Secondly, it did the same for the Jerusalem Temple reliably enough to permit the evolution of stringent rules for the use of aromatics in the rituals.⁴⁸ Thirdly, it allowed south Arabian aromatics to reach the Greek-language area. They had been absent not only from the Mycenaean world⁴⁹ but also from the Homeric epics. The epics (unlike the *Hymns*) make no reference to cassia, cinnamon, myrrh, or frankincense, but do use compounds of *θύος* and *θυόω*, both for clothing⁵⁰ and especially for non-animal burnt offerings on altars,⁵¹ to reflect the use of fragrant substances in cultic and domestic contexts, so that the reappearance of *thumiateria* and of their representations in Iron Age Greece and elsewhere from the early seventh century BCE onward⁵² need not imply access to south Arabian products.

The first firm reflections of such access therefore remain Sappho's allusions to frankincense (fr. 2.4 L-P) and to myrrh, cassia, and frankincense (fr. 44.30 L-P), as offerings respectively to Aphrodite and to Apollo. If those citations give us an approximate *terminus post quem non* of ca. 600 BCE, then the use of such aromatics, possibly led by use in the cult of Aphrodite,⁵³ must have started in or by the seventh century and spread rapidly in the sixth, prompting

the exclusion of the newly available substances from some established cults.⁵⁴ Already for Xenophanes, their use was an integral part of a symposion (fr. 21 B 1.7 D-K), while Pythagoreans as near-vegetarians evidently embraced their use as an alternative to animal sacrifice with enthusiasm.⁵⁵ If Empedocles II of Acragas linked them with Aphrodite in his vision of the Golden Age (fr. 31 B 128.4-7 D-K), his homonymous grandfather as victor at Olympia in 496 had 'made an ox out of myrrh, frankincense and the most expensive spices and divided it up among the people attending the festival'.⁵⁶ The anecdote is not just piquant, for it shows that as in cult, so also in social use, already by the early fifth century effective demand had generated a traffic that was substantial enough for suppliers to be able to cater for such extravagances at minimal notice. Not that the act of Empedocles I was unique, either, for six years later at another sanctuary, in a comparable act of politico-cultic ostentation, Datis as Persian admiral was able to sacrifice no less than 300 talents of frankincense on the altar at Delos (Hdt. 6.97.2). True, that will hardly have been a spontaneous gesture, but it must reflect the scale of availability of the commodity, while the two episodes together serve as further reminders of the primordial role of sanctuaries, in Greece just as everywhere else, as the milieux of actions with major economic impact.

Thereafter attestations multiply, reaching beyond the Aegean, Peloponnese, and Sicily even to Scythia if Herodotus' report of frankincense being used there as an ingredient in an overnight face-pack is to be believed.⁵⁷ The particular link with Aphrodite recurs with Xenophon's gift of 100 prostitutes to her sanctuary in Corinth in 464/3,⁵⁸ and soon afterwards Melanippides of Melos had some of the Danaides 'seeking out the sacred tears of *libanos* and fragrant dates and *kasia*, soft Syrian seeds',⁵⁹ but most of what follows is Athenian, not least because of Athenaeus' card-index-style knowledge of Athenian comedy. By the 420s frankincense had become a well-known import from 'Syria',⁶⁰ available from the part of the agora where the incense-sellers congregated,⁶¹ and had become a standard component of the ritual at the start of various formal occasions, ranging from contests⁶² through offerings to the gods, perhaps especially at the new moon,⁶³ to (by the 380s) marriages.⁶⁴ By the mid-fourth century if not earlier, with the shift of custom and terminology from 'symposion' to 'second table', myrrh, cassia, and frankincense were being seen as appropriate components for the later stages of a banquet.⁶⁵ Plainly, too, by then frankincense had become comparatively inexpensive: even if Antiphanes' misanthropic Timon was exceptional in grudging an obol's worth for all the gods and goddesses,⁶⁶ nonetheless frankincense and various kinds of honey-cakes were seen as appropriate examples for the moralising trope that modest offerings made with real piety are more acceptable to the gods than expensive ostentation.⁶⁷ If to this already wide range of uses and occasions we add the uses of aromatics in perfumes and cosmetics, as *materia medica*, and

even in warfare as a component of fireballs,⁶⁸ the scale of effective demand, although utterly unquantifiable even for Classical Athens, let alone for the Greek-speaking world in general, has to accord the trade a significant structural role in the fabric of Greek culture.

IV

The brief descriptive account given in the previous section suggests a number of observations that are relevant to the theme of this volume. First, it offers a model of commodity-supply that is flexible enough to accommodate changing circumstances through time and to apply to other such long-distance traffics. Aromatics are ideal, since the uniqueness and remoteness of the area of initial production, together with the production-end management structure as reported by Theophrastus, allow one to create a simple linear model composed of producers, hubs (e.g., Marib, then Taymā', Hindanu, Petra, Gaza, and Tyre, then Memphis, Rhodes, Peiraeus, and Syracuse with others), transporters (Sabaioi, Minaioi, Nabataeans, and others), distributors (Phoenicians, Greeks, and Egyptians), and consumers (e.g., the temples and banqueters of Greece). It will be obvious that even so simple a model as this generates a complex network: for a different commodity such as copper, with multiple sources of production, the map – whether topological or geographical – generated by it will be still more intricate, but the underlying structure will remain the same.

Secondly, in total contrast to traffics in grain or ship-timber, there is virtually no trace of sustained or systemic intervention by the polities of the areas of consumption in any external aspect of the traffic or in the operation of a price-setting market. To be fair, that statement requires three qualifications. First, it must accommodate the occasional gesture in politico-euergetic mode, such as the gifts made by Antiochus I and Seleucus I to the Apollo temple at Didyma in winter 288/7.⁶⁹ Second, it must accommodate the activities of market-supervisors such as the Athenian *agoranomoi* in guarding against adulteration.⁷⁰ Third, it must accommodate the evidence from third- and second-century Delos both of price-fluctuation within the 4 to 6 dr/mina range and of 'an absolutely uniform price for frankincense, governed by amount purchased, of 5 dr/mina for over 71 years from 250 to 169 BC'.⁷¹ This third qualification, surprising in itself (and various explanations are possible, as Reger notes), nonetheless suggests that in spite of the length and vulnerability of the supply-chain supplies were stable enough to permit such uniformity.

Thirdly, there is room for caution about the role of polities elsewhere in the supply-chain. True, the terminology used by our Greek literary sources hardly allows us to distinguish between transporter or distributor and polity, but inscriptions set up by the South Arabians themselves seem to offer a corrective, since they reflect participation in the traffic on the part of individuals who

identify themselves by patronymic and clan, not as officials.⁷² That parallels known initiatives at Athens by or for Sidonians, Kitians, and Egyptians, where the ethnic collective denotes an expatriate or peregrine group of merchants, not the polity.⁷³ Politics are indeed visible, but as managers of the exchange system as described by Theophrastus' informants, as providers of infrastructure such as the Minaian colonies on the Incense Road, and of course as fiscal beneficiaries.

Fourthly, if for the sake of argument one takes the 5 dr/mina price of frankincense as a norm, it allows some assessment of known scales of expenditure. At one extreme Timon's minimalist outlay of 1 obol (footnote 66) buys a little over a half-drachma weight of incense, while at the other extreme Alexander's gift of 500 talents to Leonidas (footnote 29) would have had a 'street-value' of 150,000 drachmas or 25 talents in silver. In contrast, the size of the Seleukid donation to Apollo, with its mere 3,000 drachma-worth of incense (footnote 69), looks almost niggardly, and prompts unanswerable questions about the origins of the content of the gift.

Fifthly, while the devising of the linear model of commodity movement sketched herein was a simple matter, that of creating its complement, a model of what went in the other direction as 'payment', is not. Indeed Plog's warnings in his classic paper of 1977 against over-simplified models of exchange are abundantly confirmed. Attestations of the direct traffic of commodities from the Aegean to Yemen are totally absent, for although there is ample evidence for Aegean ceramics reaching the Levantine coast, and even for some of it reaching as far as Ezion-Geber at the north end of the Gulf of Aqaba, none seems to have penetrated further. Hoard evidence is similarly silent about the direct penetration of Aegean coined silver,⁷⁴ while in contrast 'Athenian-styled' coinages came to be minted not merely in the Phoenician cities but also by the Sabaeen states.⁷⁵ The model of direct Greek participation, as attested from the late seventh century BCE onwards for exchange with Egypt by the trading-stations of Heracleia and Naukratis in the Delta, is therefore inapplicable.⁷⁶ Instead, just as the use of 'Syrian' as a conventional Greek epithet for frankincense (footnote 59) will have reflected the role of the Phoenician city-states as intermediary hubs, so too Ezekiel, composing his sarcastic but elegiac allegory of Tyre in the 600s or the 590s⁷⁷ and reshaping an older Tyrian document for his own purposes, cited Yawan along with Tubal and Meshech as a source of Tyrian imports of 'slaves and vessels of bronze',⁷⁸ thereby obliging us to envisage tradable commodities of Aegean origin (including trafficked humans) as reaching the Phoenician coast but no further. In any case, Pliny's portrait of the haemorrhage of profit later suffered by transporters along the Incense Road as various parties took their cut will have applied to all periods of the traffic.⁷⁹

One final aspect can only be touched on, since its ramifications extend far beyond the remit of this volume. Egyptian outreach into Sinai for primary materials such as copper and turquoise had already led to mining exploitation in southern Sinai and was later, in the thirteenth through twelfth centuries BCE, to yield further activity in the Timna' valley, some 25 km north of Elat.⁸⁰ In itself this activity had nothing to do directly with aromatics, but it was one of many commodity traffics, driven especially by demand in Egypt, which came to use the same transit routes over Sinai and beyond. In consequence, by the Late Bronze Age (if not long before) a set of divergent, overlapping, and ever-changing networks of communication had emerged within a single region. Very broadly, in the east-west dimension it runs from the eastern marches of Egypt across the Negev and into the Saudi desert beyond Jordan, and in the north-south dimension runs from the latitude of the Dead Sea within present-day Israel and Jordan southwards into the Hejaz: in essence, Transjordan and the Negev. At least from the early first millennium BCE, if not from much earlier, complex geopolitical influences seem to have turned this region, in the very literal sense, into a crossroads, with major cultural consequences. They cannot be set out in detail here,⁸¹ for anyone who explores the course of scholarship in the last forty years about the history of the region in the Late Bronze and especially the Early Iron Age becomes aware of an intense debate over land use, settlement patterns, oscillations and tensions between settled and nomad life-styles, economic activities, population densities, state formations and dissolutions, ethnic identities, and external influences. The intricacy of that debate is compounded by the never-ending arguments over the historicity of Solomon, for whatever historical core may underlie the Biblical narrative of Solomon's personal and 'trading' relationships with Hiram of Tyre to the north and with a queen from 'Sheba' to the south⁸² has to imply for the mid-tenth century BCE a securely usable north-south line of communication by land from Tyre to the Gulf of Aqaba. Moreover, even without the Biblical references (of very early dramatic date) to 'the King's highway',⁸³ the distribution maps of 'Midianite' pottery from Qurayya in the late Bronze Age,⁸⁴ and several centuries later that of Edomite pottery from Buseirah,⁸⁵ are sufficient in themselves both to attest the existence of a communication network and to show it capable of transporting heavy and bulky materials. Aromatics used it, but did not generate it.

Moreover, that network was one among countless such in the Old World, which current scholarship is still far from having fully identified and mapped. The fuller that map becomes, the clearer the sense that we shall have of the ways in which separate and largely isolated cultures gradually came to interact and to form that loosely linked *oikoumene* which, to his eternal honour, Hecataeus was the first to describe systematically. We owe it to him to take the task forward.

NOTES

- 1 Moreno 2007a; Oliver 2007: 228–59; Bissa 2009; van Alfen, Chapter 13 in this volume.
- 2 An overview in Champion *et al.* 1984: chapter 6, with update for northern Europe in Prescott and Glorstad 2011.
- 3 Spindler 1994: 189 for the date.
- 4 Sherratt 2003; Bachhuber and Roberts 2009.
- 5 Renfrew and Cann 1964/1979; Tykot and Ammerman 1997; Bienkowski and Millard 2000: 217–18 (Baird); Tykot 2011. A wholly separate long-distance network is briefly noted for Dufār (Dhofar) by Zarins 1997: 256.
- 6 For up-to-date references, cf. Hughes-Brock 2011: 99.
- 7 Fell 1951. Cf. the comparably wide distribution of Antrim porcellanite axeheads in the British Isles outside Antrim in 3800–2500 BCE (Waddell 1991/92: 32, figure 3).
- 8 Orlin 1970; Veenhof 1995; Kuhrt 1998.
- 9 D’Ercole 2002: 149–87; Hughes-Brock 2011: 102–8 with references.
- 10 Hdt. 4.181–185, with Liverani 2000 and Carusi 2008: 110.
- 11 Its origins lie in a visit to Petra in 2010, which was invaluable as much for the museum as for the site. I therefore owe especial thanks to Kay Prag and Odeh Al Shobaki as ciceroni, and to Drs Khairieh Amr and Fawzi Zayadine, the authors of two most helpful explanatory placards on the Incense Route and Nabataean Trade in the Petra Museum. I also thank Dr Barbara Porter of ACOR and Dr Amr for informative email correspondence, the organisers of the Nabataean Day of the Society for Arabian Studies’ annual conference in London in July 2011, at which a first inadequate version of this paper was offered, and various participants on that occasion, especially David Johnson, Michael MacDonald, Christopher Tuttle, and Robert Wenning, for helpful comments and suggestions. I also thank Michael Sommer, Bruce Routledge, and other participants for helpful discussion and guidance after I gave a second, less inadequate version in Liverpool in November 2011. I further thank Sue Sherratt, Alan Millard, and Helen Hughes-Brock for comments on a near-final draft version, and also Edward Harris as editor for correcting errors and calling my attention to one serious omission.
- 12 Encyclopaedic compendium in Hackl *et al.* 2003. Also Kammerer 1929: 32–78; Starcky 1966: esp. 904–40; Hammond 1973; Negev 1977; Groom 1981; Hornblower 1981: 144–50 and 178; Eph’al 1982; Bowersock 1983, especially chapters 2 and 5; Millar 1993: 387–428; Avanzini 1997; Millar 1998; Healey 2001: 25–37; Sartre 2001: 411–24; Schmid 2007.
- 13 I may be permitted to salute in this respect my colleague Kenneth Kitchen, whose mastery of all the relevant material is visible *inter multa alia* in Kitchen 1997a; 1997b; and 2001.
- 14 For the term, Morley 2007: 52–4.
- 15 For linguistic and botanical identifications (not always certain), cf. Hepper 1969; Miller 1969: 98–109; Groom 1981: 96–164. For perfumes in particular, cf. Reger 2005 with references.
- 16 Groom 1981: 99 (map); Müller 1978: 702–3 (botanical identifications), and 703–9 (terminology).
- 17 For Yemen in general, see the initial chapters in Daum 1987, especially by Schmidt; de Maigret 1999; Kitchen 1997b: 128–30 with further references; and especially Simpson 2002. Quotation from Daum 1987: 10. Illustration of the Mārib dam by Robin 2002: 55, figure 16.
- 18 Detailed overview in Nebes and Stein 2008; brief review of chronology in Kitchen 1997b: 133–7. It is proper here to signal both the portrait of the region as now presented by the papers in Huth & Van Alfen 2010 and the project to create a digital *Corpus of South Arabian Inscriptions* which is being directed at Pisa by Prof. A. Avanzini.
- 19 *Imprimis* Androstenes of Thasos (Berve 1926: II 40 no. 80: *FGrH* 711), sent by Alexander around the Saudi peninsula in winter 324/3 (Arr. *Anab.* 7.20.7). Groom 1981: 63 has suggested Anaxicrates on the strength of Strabo 16.4.4, C768, but see Jacoby’s sceptical

- notes 1–2 to his Commentary on the Argive local historian Anaxicrates, *FGrH* 307. The fourth-century Heracleides of Cyme is also possible, since a fragment of his *Persika* describes the luxurious life-style of the king of the incense-producing area and also reports him as ‘independent and subject to no-one’ (*FGrH* 689 F 4 *apud* Ath. 12.517bc).
- 20 *Hist. Pl.* 9. 4. 5–6, tr. Hort (LCL) with emendations: not cited in Hackl *et al.* 2003. Exegesis in Müller 1978: 709–10.
- 21 I do not enter into the debate whether they are to be identified with the Aramaean *Nabatu*, *Nabajat*, or *Nab’ât* named in eighth- and seventh-century Assyrian annals as defeated opponents of Sennacherib and Ashurbanipal (references in Hackl *et al.* 2003: 15–19) or with the *nbjt* known from a sixth-century inscription from near Taymâ’ (Broome 1973).
- 22 For the sceptical case, see Negev 1977: 527.
- 23 Will 1979: 61 underestimated its importance by dismissing it as ‘sans lendemain’ and seeing its motive as politico-strategic rather than economic: within this zone of perpetual competition between power based in Syria and power based in Egypt, it was as much in Ptolemy’s interest to tap the caravan trade and the production of bitumen as it was in Antigonos’, so that a pre-emptive attack made sense. Moreover, as Billows 1990: 288 notes in a much more perceptive discussion, Theophrastus records Antigonos as inspecting the logs of frankincense ‘which the Arabs brought down’ (*Hist. Pl.* 9.4.8). Another valuable primary product of the region, copper, might also come into question if the Timna deposits (for which see now Bimson and Tebes 2009) were still workable. Moreover, whoever excogitated Alexander’s ‘last plans’ was well aware of the gains to be made from the aromatics of Arabia (Arr. *Anab.* 7.19.6 and especially 20.2).
- 24 A comparable distrust of the agricultural life has been detected in the L-strand of the Pentateuch (Eissfeldt 1965: 198) in contrast to ‘the enthusiastic acceptance of agricultural life’ detectable in the J-strand (ib.: 200). Ibn Wahshiyya’s treatise *Filahât al-Nabâtiyyah* (*Nabataean agriculture*) stems from a much later epoch.
- 25 Tentatively identified as the gum of *Tamarix gallica* by Geer *ad loc.* (LCL, p. 90 n.).
- 26 Autopsy will have reduced the risk, since Hieronymus was in the region shortly afterwards himself, having been given the task of collecting the slabs of bitumen which surfaced from the Dead Sea some 80 km to the north (Diod. Sic. 19.100.1–2), although he also adds that that enterprise failed when ‘the local Arabs’ massacred his work-force. By Diodorus’ time, and probably long before, the Nabataeans had gained control of that area, from which ‘they gain no small revenues’ (2.48.6). He goes on to mention also the so-called balsam that grows in a nearby valley and nowhere else (2.48.9), used extensively by physicians in their *pharmaka*.
- 27 By that term he denotes the inhabitants of the coast of Palestine and Sinai (Hdt. 3.8.1, with Asheri and Medaglia *ad loc.*).
- 28 Hdt. 3.88.1 and 97.5, with Hackl *et al.* 2003: 14. Müller 1978: 747 suspects that the figure is overstated, but notes further evidence (including Hdt. 6.97.2) for the use of frankincense by the Achaemenids.
- 29 Plut. *Demetr.* 7.1, with further references by L. Santi Amantini *ad loc.*
- 30 Plut. *Alex.* 7.6–7 and *Mor.* 179e–f (not cited in Hackl *et al.* 2003). The story was already known to Pliny (*HN* 12. 62).
- 31 Sketches of its vicissitudes in Groom 1981: 204–7; Glucker 1987: 1–3; and Hackl *et al.* 2003: 391–3. It is pertinent that the mint of Gaza predominates in the conspectus of ‘Athenian-styled’ fourth-century Philistian coinage assembled by Fischer-Bossert 2010 (briefly also Huth 2010: 231–2).
- 32 Plin. *HN* 12.64; but Strabo 16.4.4 cites (from Eratosthenes?) a figure of seventy days.
- 33 Geertz 1979: 129–38, reporting (from his fieldwork at Moroccan Sefrou in the 1960s) local recollections of the pre-motorised 460-km transit along ‘the Royal Way’ from Fez over the Atlas range to Tafilalt.
- 34 But other documentation cites Minaioi as the predominant carriers (von Wissmann 1970: 947–69; Renfrew 1975; Müller 1978: 725; Hoyland 2002: 69–70, citing *inter alia* RES 3022 = M I 247).

- 35 Mueller 2006: 151–7 (Ptolemaic initiatives in general). References for **Adulis** in Peacock and Blue 2007a; 2007b; for **Berenice** in Cohen 2006: 320–5 and Fraser 2009: 248–9 s.v. Βερενίκη 3; for **Myos Hormos** in Cohen 2006: 332–8 and Peacock and Blue 2006; for **Qana'** in Sedov 2007.
- 36 References to trade with India and beyond are assembled by Müller 1978: 719–20; also 727 (citing *Periplus* 28 for eastbound traffic from Kane), 728, and 731. However Kauṭīliya's *Arthaśāstra* makes only a passing reference to 'spices' in a list of imported and taxable goods (2.22.6 ed. Kangle). The case for a traffic going east by sea and/or north overland from Ḥufār (his 'Dhofar') to Mesopotamia is presented by Zarins 1997 for the Bronze Age, and by Edens and Bawden 1989 and Liverani 1992; 1997 for Iron Age transits via Taymā' and Hindanu.
- 37 Saleh 1973; Müller 1978: 737–41; Kitchen 1997a; 1997b.
- 38 Likely routes are discussed by Groom 1981: 165–213; Eph'al 1982: 12–7; Liverani 1992; de Maigret 1999; and MacDonald 1997.
- 39 Aharoni 1967: 39–57, with clear visual expression in the form of his map 3 (p. 40). More briefly, Sherratt 2003: 48–9.
- 40 Certainly by the third millennium, on the evidence from Umm an-Nar off the Oman coast (Potts 1990: 129–30 with earlier references).
- 41 The *terminus post quem non* for which appears to be the participation of Gindibu's 1,000-camel force against Shalmaneser III at the battle of Qarqar in 853 (Kitchen 1997b: 135 with references).
- 42 Müller 1978: 724; Eph'al 1982: 4; Knauf 1983: 149–51, retaining an allegiance to a much earlier date; Wapnish 1984; Artzy 1994: 134–5 with references; Jasmin 2005.
- 43 Cavigneaux and Ismail 1990, with Liverani 1992 and Kitchen 1997b: 134; Robin 2002: 58.
- 44 And more: while consolidating his father's conquests, Tiglath-Pileser's son and successor Sargon II kept his side of the bargain by opening up a *kanum* harbor somewhere in North Sinai for Assyrian and Egyptian merchants (Eph'al 1982: 101–3, with Rhinokoloura as a suggested location [104]).
- 45 References in Eph'al 1982 *passim*.
- 46 Wapnish 1984 with evidence from Tell Jemmeh 10 km south of Gaza; Finkelstein 1995: 121–2 and 148.
- 47 Eph'al 1982: 179–88; Bawden 1983: 40–7; Wapnish 1984: 179. Earlier references are cited at *ANET* 306 note 5: detailed discussion, with texts and translations, in Beaulieu 1989: 149–85.
- 48 Müller 1978: 743–6; *ABD* III: 404–9 s.v. Incense (K. Nielsen) and 409–10 s.v. Incense Altars (M. D. Fowler).
- 49 The aromatics, condiments, and spices known to the Mycenaean world included celery, coriander, cumin, cyperus, fennel, mint, pennyroyal, safflower, and sesame. 'Cypriot' and 'Phoenician' were used as identifiers, presumably of transporters if indeed the sesame was already coming from India (Chadwick 1973: 131, 221–31, and 441–2, citing Miller 1969: 87: update, with further references, in Dodinet 2008). A comparable list has been constructed for Mari (Joannès 1993).
- 50 E.g. *Il.* 14.172 and 15.153.
- 51 *Il.* 8.48, etc., with Kirk's note on *Il.* 6.269–70.
- 52 Evidence in Zaccagnino 1997; Invernizzi 1997; and Massar 2008, with Millard 2011 for the Levant in general. This is not the place to list the widespread evidence for incense-burners in the Late Bronze Age Mediterranean: see, e.g., Artzy 1994: 125 and 128–9, and Mederos and Harrison 1996, whose tables on page 247 suggest a hiatus in their use in the eastern and central Mediterranean during the ninth century BCE except at Megiddo.
- 53 The altar in her temenos at Paphos is called θυήεις (*Od.* 8.363).
- 54 That of Apollo at Delphi most conspicuously (Plut. *Mor.* 397a), but also that of Hecate at Cyrene (Sokolowski 1962: 220, no. 133, with further references for chthonian cults). Plato's hyper-reactionary old age wished to exclude frankincense 'and similar foreign fragrant stuff' altogether (*Leg.* 8.847b, tr. T. J. Saunders).
- 55 Iambl. *Vit. Pyth.* 21.98 and 28.150; Diog. Laert. 8.20.

- 56 Ath. 1.3e (trans. Olson, LCL): Moretti 1957: 81, no. 170. The stuffing used for the ox at the festival of Isis could have provided a suitable recipe (Hdt. 2.40.3).
- 57 4.75.3. I am unable to verify or expand on the undocumented report of Rossignani 1997: 148 that 'burials containing frankincense are found in different chronological and geographical contexts such as Egypt and the area of Golasecca culture' [sc. in pre-Roman NW Italy].
- 58 Pind. fr. 122, with Moretti 1957: 249–50 for further references.
- 59 PMG 757 *apud* Ath. 14.651f (tr. Olson).
- 60 Hermippus fr. 63 K-A *apud* Ath. 1. 27e–28a; Eur. *Bacch.* 144; Anaxandridas *Protesilaos* fr. 42 *apud* Ath. 4.131d; Arcestratus fr. 60 Olson-Sens; Mnesimachus, *Hippotrophos* fr. 4 K-A *apud* Ath. 9.402e–403d.
- 61 Eup. fr. 327 K-A *apud* Poll. 9.47; Critias fr. 88 B 70 D-K; Ar. fr. 845 K-A: Cratinus the younger fr. 1 K-A *apud* Ath. 14.661e. Lallemand 2008 briefly reviews market processes. The 330s and 320s record dedications of *phialai* by three frankincense-sellers (Meyer 2010: 2–9, A.369 and 563; 26.17), two myrrh-sellers (ib. 30.31 & 34), and three sesame-sellers (ib. 2–9 A.221; 11.23 and 27).
- 62 Ar. *Vesp.* 860–2; *Ran.* 871–3; perhaps also *Thesm.* 36–8 (although incense is not explicitly mentioned).
- 63 Ar. *Vesp.* 94–6; Theopomp. *FGrH* 115 F 344; Ar. *Plut.* 1112–15; Paus. 5.15.10.
- 64 Anaxandridas, *Protesilaos* fr. 42 *apud* Ath. 4.131a–f; Antiphanes, *Timon* fr. 204 *apud* Ath. 7.309d; Men. *Sam.* 158; general survey in Bodiou and Mehl 2008. I cannot identify the occasion for the one fifth-century Athenian epigraphic citation of frankincense (*IG* I³ 387 line 150, expenditure by the *epistatai* of Eleusis in 408/07).
- 65 Nicostratus *Pseudostigmatias* fr. 27 K-A *apud* Ath. 15.685c; Mnesimachus *Hippotrophos* fr. 4 K-A *apud* Ath. 402e–403d; Arcestratus fr. 60 Olson-Sens *apud* Ath. 3.101c–e; Alexis *Philiskos*, fr. 252 K-A *apud* Ath. 14.642f, with Arnott *ad loc.* For 'second table', see also Arnott 1996: 493–4.
- 66 Antiphanes *Timon* fr. 204 *apud* Ath. 7.309d.
- 67 Antiphanes *Mystis* fr. 162 K-A *apud* Porph. *Abst.* II 17; Theopomp. *FGrH* 115 F 344; Men. *Dys.* 449–50; Frag. Com. Adesp. 372; possibly also Men. *Karchedonios* fr. 1 Sandbach OCT = 226 Koerte-Thierfelder = fr. 4 K-A *apud* Ath. 9.385e.
- 68 Respectively references in Müller 1978: 764–5 and Reger 2005; Müller 1978: 768–72; Aen. Tact. 35.1.
- 69 I.Didyma 424 = *OGIS* 214 = *RC* 5 = Bringmann and von Steuben 1995: no. 480, lines 49–51: it comprised 10 talents of frankincense, 1 talents of myrrh, 2 *mnai* of kassia, 2 *mnai* of cinnamon, and 2 *mnai* of kostos, besides various items of silverware.
- 70 *Ath. Pol.* 51.1. Müller 1978: 736–7 assembles evidence for adulteration.
- 71 Reger 1997: 56–7 (citation from p. 57): the contrast with the wide fluctuations which are recorded at Hellenistic Delos for certain other commodities (Chankowski-Sablé 1997) is stark.
- 72 Hoyland 2002: 69–70; but Edens and Bawden 1989 envisage conflicts between polities over control of the aromatics trade.
- 73 Thus, honours for Straton King of Sidon, presumably as facilitator, are carefully distinguished from privileges for Sidonian merchants (*IG* II² 141); the 'Kitieis' who are allowed in 333/2 to found a sanctuary for Aphrodite turn out a month later to be 'Kitian merchants' (RO 91 = *IG* II³ 337) and the same will have been true for the 'Egyptians' and their sanctuary of Isis (ib. lines 42–5).
- 74 *IGCH* 1755 (Medain Salih, before 1856), given a fourth century BCE date by Jenkins, is the only pre-Alexander hoard attested in *IGCH* from the Incense Road route, with 25 AR coins described as 'Egypto-Arabian'. But their appearance will merely have continued the long-established use of weighed Hacksilber, the numerous hoards of which in Cisjordan (Thompson 2003: 70, figure 1) interestingly stem from much the same region (and mostly from the same period) as the bronze incense-burners listed by Mederos and Harrison 1996: 246, table 7 and figure 4.

- 75 Huth and van Alfen 2010 *passim*; briefly Kroll 2011.
- 76 Möller 2000; Höckmann and Kreikenbom 2001; Villing and Schlotzhauer 2006.
- 77 Liverani 1991: 71–2 and 79; Block 1998: II, 53.
- 78 Ezek. 27:13 (tr. NEB), Tubal and Meshech being the Moschoi and Tibarenoi of Hdt. 3.94.2 in central Anatolia (see Asheri and Medaglia *ad loc.* and Block 1998: II, 72–3). Users of NEB should note that the ethnic ‘Rhodians’ in Ezek. 27.13 as the source of ivory and ebony reflects an emendation of *Dodanim* to *Rodanim* which, although already reflected in LXX, is implausible and anachronistic (Liverani 1991: 69, note 13; Block 1998: II, 74).
- 79 *HN* 12.51–70, with Müller 1978: 735.
- 80 *ANET* 229–30 (earlier mines); Rothenburg 1988.
- 81 It may be followed through volumes and studies such as Eph’al 1982; Dornemann 1983; Sawyer and Clines 1983; Edens and Bawden 1989; Cogan and Eph’al 1991; Bienkowski 1992; Edelman 1995; Finkelstein 1995; Handy 1997; Dever and Gitin 2003; Graslin-Thomé 2009.
- 82 I Kings 9:26–8 and 10:1–13.
- 83 Num. 20.17 and 21.22, with Aharoni 1967: 49–54.
- 84 Bawden 1983; Rothenberg and Glass 1983: 70 (figure 2), with update in Kitchen 1997b: 131–2.
- 85 Oakeshott 1983.

THE MARKET FOR SLAVES IN THE FIFTH- AND FOURTH-CENTURY AEGEAN *Achaemenid Anatolia as a Case Study*

David M. Lewis

τῶν δὲ κτημάτων πρῶτον μὲν καὶ ἀναγκαιότατον τὸ βέλτιστον καὶ οἰκονομικώτατον·
τοῦτο δὲ ἦν ἄνθρωπος. διὸ δεῖ πρῶτον δούλους παρασκευάζεσθαι σπουδαίους.

Of property, the first and most necessary sort is that which is also the best and most useful
for household management: the human being. Our first step therefore must be to pro-
cure industrious slaves.

[Arist.] *Oec.* 1.5.1

The observation made by the anonymous fourth century author of the *Oeconomica* on the importance of procuring industrious slaves, although stated in relation to the domestic micro-economy, is equally applicable at a more general level to the multitude of slave systems that existed in the Classical Aegean. In Attica, the system we know best, the existence of a constant, reliable supply of slaves was a *sine qua non*: its economy made considerable use of slave labor in a wide variety of sectors, from agriculture and manufacture to mining, prostitution and a range of services. The purpose of this chapter is to explore how far involvement with markets and commerce in sourcing slaves enabled this slave economy¹ to function, and to gauge the degree to which foreign supply enabled the Athenians to create a slave system that was significantly different at a structural level from those systems that relied on reproduction alone to perpetuate themselves numerically, such as the largely agrarian slave economies of Sparta and Crete. Rather than aim at a general picture, this chapter provides a case study. It aims to isolate one single branch of the slave trade and subject it to close scrutiny, by tracing the flow of slaves from Achaemenid

Anatolia to Attica; this allows us to consider the economics of the slave supply in detail, and our basic findings can be contextualised in terms of a larger comparative framework.

In what follows we shall examine the slave supply from three vantage points. We begin at the source (or more strictly, a source), by considering the range of processes that dislodged Anatolians from their native communities and led to their transport and sale to Greek buyers. In particular, I am interested in the question of whether this movement of enslaved humanity was primarily caused by hostile Greeks raiding 'native' communities (as some scholars have claimed), or whether Greeks and non-Greeks more frequently co-operated in slave trafficking, the 'dislodging' being mainly a concern of non-Greek suppliers. Our second vantage point encompasses the prosaic issues of transport and its related costs, the markets in Attica which existed for the sale of slaves, as well as the prices which slaves fetched upon arrival in the market and the effect these prices had on the structure of the Attic slave system. This allows us to account for (*inter alia*) the relative cheapness of slaves in Attica – a point that has been observed by several scholars – as well as the pattern of slave ownership among the free populace. Our third vantage point draws back from this narrow focus to consider more broadly the population dynamics of slavery in Attica. It looks comparatively, and takes as its counterpoint the labour systems found in Sparta and other parts of the Greek world that maintained large slave populations without engaging to any great extent with foreign supply. This contrast sharpens our appreciation of the degree to which the Attic system had gone beyond reliance on the self-sufficient strategy of natural reproduction pursued elsewhere, and embraced the opportunities presented by engagement with foreign markets to expand a number of areas of its economy in which slave labour played a crucial role. Examining the problem from this vantage point will help us see how the slave trade interlocked with other aspects of Athens' economy, feeding some of its principal sectors with labour. Beyond focusing on Attica, I aim to formulate some general observations on slave-supply strategies throughout the Greek world.

THE ACQUISITION OF SLAVES FROM ACHAEMENID ANATOLIA

A brief overview of the slave sources in Achaemenid Anatolia shall serve to set the scene. It should be emphasized that Persian control of the region was uneven. Imperial presence was particularly strong in satrapal centres such as Sardis and Dascylium; indeed, the number of Persians 'on the ground' in certain parts of Anatolia was impressive.² In other regions, Persian authority was less pronounced. One might note Paphlagonia on the Black Sea littoral, whose king Otys switched his allegiance from the Persian king to Sparta in the early fourth century (Xen. *Hell.* 4.1.3; Ages. 3.4), or Cilicia, firmly under the control

of a native dynast but nominally subservient to Persia.³ Other areas were notorious for their unrelenting resistance to the authority of the Great King, particularly the people of the Mysian hill country and the Pisidians in the south.⁴ Any analysis of the processes leading to enslavement in Anatolia must take into account the politically fractious and ethnically complex texture of the region. That said, our Greek evidence does allow us to gain some idea of the more important suppliers of slaves.⁵ At the head of our list must be Phrygia, which the fifth-century comic Hermippus (fr. 63 K-A) cited as a region particularly noted for its slaves.⁶ Epigraphic evidence, combined with literary allusions, suggests that Carian slaves were common; nor should we forget that the large numbers of 'Syrian' slaves mentioned in our sources may well be in part Anatolian: Herodotus (5.49; 7.72) reminds us that in his day the term 'Syrian' could apply to Cappadocians and not merely to the inhabitants of the northern Levant. Fewer references to areas such as Lydia and Paphlagonia suggest that slaves from these regions, although hardly uncommon, were probably not to be found in quite as large numbers.

If the relative importance of different regions of Anatolia as slave-suppliers to the Aegean world is roughly clear, the various processes that generated those slaves are comparatively opaque. Orlando Patterson lists eight basic mechanisms which can account for entry into slavery: (1) capture in warfare, (2) kidnapping, (3) tribute and tax payment, (4) debt, (5) punishment for crimes, (6) abandonment and sale of children, (7) self-enslavement and (8) birth.⁷ Several historians have argued that the key to explaining the derivation of slaves from Anatolia lies in predatory military activity by Greeks; sometimes full-scale warfare, but generally minor raids, in other words, points (1) and (2) of Patterson's typology. In an important essay on the sources of slaves, Garlan sought to account for the enslavement of Anatolians by positing a 'military superiority' of Greeks over non-Greeks which gave impetus to the movement of slaves towards Greece.⁸ Unfortunately, Garlan's explanation is quite vaguely conceived: he seems to imply that Greeks were somehow able to coercively acquire slaves from fairly helpless native communities, but does not indicate in any detail how this might have been achieved (interestingly, he explicitly rules out market forces from his explanation). A more direct cause is posited by Rosivach:

The actual enslaving was probably done through organised raids such as those described later by Xenophon (*Anab.* 7.3.34-48 [Thrace]) and in Menander's *Aspis* (23-37 [Lycia]), with the captured *Barbaroi* being re-sold through slave-dealers to Athenians and other end-owners elsewhere in Greece. Natives caught in raids rather than prisoners of war were, in the long run, the principal source of slaves from these regions (sc. Anatolia).⁹

In a recent essay, Braund has argued that both trading and raiding by Greeks played a significant role in the acquisition of foreign slaves; in his view raiding seems to play almost as important a role as trade.¹⁰ It should be noted that a model which accounts for the acquisition of slaves from Anatolia mainly through raids and warfare by Greeks against non-Greeks is at least historically plausible: one might note the tactics of Arab slavers in the Sudan, who gutted the interior in their expeditions for slaves.¹¹ The model advocated in various permutations by these scholars is not therefore *a priori* unlikely.

It does, however, contain serious flaws. First and foremost is a lack of evidence, for the examples of Greek raids into the interior are few and do not necessarily represent a wide-scale phenomenon. Xenophon's *Anabasis*, although it describes in detail the predations of a Greek army, can hardly stand as indicative of normal conditions throughout the classical period. The sheer ubiquity of Anatolian slaves in the Aegean,¹² if accounted for mainly by Greek raids, would imply predation on a massive scale. If this were so, surely we would expect it to be mentioned more prominently in our texts, and such a phenomenon must have generated diplomatic friction with the Persians, a subject one of our writers would have commented on. Yet they do not. If many or most of the Anatolian slaves in the Aegean world were not snatched by Greek raiders, they must have been acquired by other means. What could these have been?

The most compelling answer is that Greeks had little to do with the primary processes of enslavement; rather, slaves were an abundant native 'commodity' exchanged for Greek wares through commercial interactions; these are detectable archeologically from an early period. Space does not permit a full survey, but a brief consideration of the excavations at Gordion, the old seat of the Phrygian kings, should be sufficient to illustrate the point. The finds provide striking evidence for the steady import of Greek goods to Gordion from the eighth century onwards. Despite its location hundreds of miles from the coast, trade in various commodities from the Greek world is evident, particularly pottery and foodstuffs, the transport of which can have been no easy feat.¹³ Attic fine wares seem to have been popular with local elites, and Greek transport amphoras can be found in large numbers, attesting to local tastes for Greek wine. What is more, this trade seems to have run unabated despite political and military friction between Persia and Greece. De Vries writes the following:

One of the most significant aspects of the succeeding period, the Early Classical, c. 480–450 B.C., is that Attic pottery continued to arrive with no drop-off. This was, of course, the period when, in the aftermath of the failed Persian invasion of mainland Greece, the Delian league, under the direction of Athens, went on the offensive against the Persian Empire (...) the variously hot to cold war, though, had no discernible negative effect on the trade in Attic fine ware to Gordion or, for that matter, in another commodity conspicuous at the time, Chian wine.¹⁴

What did Gordium's consumers of Greek goods offer in return? The most likely answer is that slaves will have ranked highly among Phrygian exports to the Aegean: the fame of slaves from this region is clear from as early as the beginning of the sixth century, as far afield as Tyre in the Levant.¹⁵ This picture of commercial contacts is strengthened if we consider our second source, an inscription dating to the late sixth century BCE from Cyzicus, an important Greek port perched on the edge of Hellespontine Phrygia (*SIG*³ 4). The main text runs as follows:

In the magistracy of Maiandrios: The city gave the son of Medikes and the children and descendants of Aisepos *ateleia* and *prytaneion*. To be granted except for the *nauton* and the tax on the use of public scales and the tax on horse sales and the 25% tax and the tax on the sale of slaves: all other things are exempt from tax. And regarding these things the people sacrificed in attestation of an oath. The city gave this stele to Manes son of Medikes.

One early editor of the inscription, F. Hiller von Gaertringen, thought that Manes must have been a Cyzicene citizen who received this honorific grant on account of the heroic actions of his father.¹⁶ But a close analysis of the text throws up major problems with this interpretation. The first clue lies in the name Manes, which is a non-Greek Anatolian name, suggesting (perhaps) Phrygian origins. But let us suppose for the sake of argument that Manes really was a Cyzicene Greek with a foreign name; even were this so, problems remain. The most glaring is the list of exceptions to Manes' *ateleia*. The grant makes him immune from taxes except for several specifics: the *nauton*, the tax on the use of public scales, the taxes on the sale of horses and slaves, and a 25 percent tax. If this decree was merely a straightforward honorific grant to the son of a dead patriot, it was concocted in an extremely unusual fashion – why not simply grant *prytaneion*? Why stipulate so carefully the aforementioned exceptions to the *ateleia*? Surely a more convincing suggestion can be advanced. I suggest drawing three plausible inferences from this document. First, we should jettison the idea that the honour was granted for a military act. It is far more likely that it is economically oriented; after all, *ateleia* is a grant frequently bestowed on foreign merchants or dynasts with mercantile interests.¹⁷ This leads to the second inference: that the exceptions to the *ateleia* are connected to the business activities of Manes, particularly the import of horses and slaves. These were commodities that the interior of the satrapy produced in abundance.¹⁸ It seems probable that they are ring-fenced as lying outside the *ateleia* because, whoever he was, Manes was responsible for bringing in a sufficient number of slaves and horses to the Cyzicene market so that the state, making a tidy sum from taxing his sales, did not want to lose this income when honouring their benefactor.¹⁹ My third inference is that Manes was probably not Cyzicene at

all, but either a successful merchant or quite possibly (since the honours attach to 'the descendants of Aisepos'²⁰) a native dynast with a stake in the trade of horses and slaves.²¹ Even if only the first two of these propositions are correct, this document furnishes us with a valuable window into the commercial links between Greeks and non-Greeks in the early years of Persian rule, and in particular into the everyday business of the slave trade. It shows that slaves were passing through Cyzicus from the interior in the late sixth century in no small numbers, that the Cyzicene state made a significant sum of money in taxing this trade, and that it was prepared to offer honours to those involved in this lucrative activity.²²

This evidence shows that far from being purely hostile, relations between Greeks and non-Greeks in our region are marked by commercial co-operation from an early period. The existence of extensive trade connections with non-Greek communities provides a context and rationale for the westward movement of slaves, and frees us from the need to rely on the mono-causal explanation (and a rather unlikely and patchily attested one at that) of Greek predation to account for the presence of Anatolian slaves in Aegean markets.²³ Predatory activities by Greek raiders and warfare are more likely to represent surface ripples on a deeper current of long-term commercial dealings, events that could throw periodic gluts of captives onto the market but were in themselves insufficient to meet the regular quotidian demand of the Aegean slave economies. If much larger numbers of Anatolian slaves were supplied through commerce with non-Greeks, it stands to reason that various internal processes in the supplier societies must be responsible for the initial enslavement of these individuals.²⁴ As to the relative significance of these mechanisms, we can only guess; if raiding was significant, it was raids by locals on locals, not depredations of Greeks that will have been more important.²⁵

WRETCHED MERCHANDISE: THE MECHANICS OF TRANSPORT AND SALE

One striking feature of our evidence for slavery in Classical Athens is the relatively low price of slaves compared to real wages. A slave in fourth century Athens generally cost between 200–500 drachmas, something like 150–200 days' worth of wages for the average skilled craftsman and quite often less; by contrast, a slave in Achaemenid Babylonia during the sixth century cost 375–750 days' wages at the average rate for a skilled craftsman.²⁶ We shall return to the issue of slave prices at the end of this section; for now we may address a pressing question: Why were slaves so cheap? The answer probably does not lie in low levels of demand, for although this factor surely fluctuated during our period, the impression of the Attic evidence, at least, is that anyone who could afford a slave would aim to buy one (e.g., *Lys.* 24.6): this was not a luxury

commodity bought only by the rich for conspicuous display, but a valuable investment owned by a large swathe of the free populace. There is no obvious reason why similarly high levels of demand should not be expected elsewhere. Two factors help to explain the low prices of slaves in this period: low transport costs, and a steady, organised and abundant supply of slaves.

For the issue of transport costs let us trace the journey of a Phrygian slave from his or her point of origin to final sale in Attica and compute a few rough figures. We may take Gordion as a hypothetical starting-point, and (to tie neatly with the preceding discussion) Cyzicus as an Aegean market. Undoubtedly there were a number of routes from the interior and a number of destination ports,²⁷ but this putative route will serve the present point to all intents and purposes. Slaves were most likely moved in coffles, that is, columns of individuals chained or roped together.²⁸

A slave coffle travelling on foot from Gordion probably covered no more than 20 miles per day.²⁹ The journey to Cyzicus is a trip of some 250 miles;³⁰ as a rough figure then, we should place the minimum journey time at around two weeks. This may serve as a conservative estimate; Gordion is located deep within the satrapy of Greater Phrygia, and slaves originating in areas located closer to coastal markets could be transported there in a shorter time. Broadly speaking, transport costs in the movement of slaves increase due to several factors. The costs of feeding and supervision must be taken into consideration, as must the means of transport, which can prove expensive. Furthermore, sale to multiple middlemen along the route racks up costs by increments, and sales taxes (such as Cyzicus' *andrapodóniē*) imposed along the way have much the same effect. A shorter distance means that costs due to feeding and supervision remain low, and that the slave can be delivered from his point of origin to the coastal market by the same merchant operating within his normal arena of travel. Shorter distances also keep down mortality rates among the slaves; longer journeys usually lead to higher levels of starvation, exhaustion, sickness and death.³¹ A couple of observations are now in order.

First, from a comparative-historical perspective, the transport of slaves from areas such as Thrace or Phrygia to Attica or other Aegean markets would have incurred rather low costs. One often reads of the high costs of land transport in antiquity, but a slave coffle could move under its own steam and travel across terrain inaccessible to vehicles; the coffle method allows many slaves to be supervised by only a few individuals, and the main outlay would be for food for the journey (probably carried by mules) and supervision.³² The tolls levied at the Anatolian coastal market and the destination market (e.g., Piraeus) probably were not much higher than 2 percent.³³ Compared to shipping a Phrygian slave to Roman Italy, never mind the enormous costs involved in moving slaves from the African coast to American markets, the movement of a Phrygian slave to Athens was an extremely cheap and simple process.³⁴

Secondly, the transportation of foreign slaves to the Greek islands and mainland implies sea travel. Our Phrygian slave would have been loaded onto a merchant ship, like Hypsipyle in Euripides' play, who bewails her condition as a piece of wretched merchandise (*meleon empolan*: Eur. *Hyps.* 759a88 [Cropp]). Pragmatically, though, this means that the slave trade responded to the rhythms of seafaring and maritime trade in general. A peak season from May through September will have delivered the bulk of slaves and we should expect that prices were lower during this period due to the increase in supply.³⁵ Less slave trading presumably occurred in the winter months when traffic on the sea-lanes slackened. It should be noted that whether some merchants specialized in transporting slaves by sea, or whether slaves simply travelled 'piggyback' on ships with other commodities, there would not have been any need for specialized vessels such as those which ran the 'triangular trade' between Europe, Africa and the Americas. We can also factor out of our equation the fatality levels which blighted that trade: the journey from a port such as Cyzicus to Athens would have only have been a matter of days (compared to the two-month Atlantic crossing),³⁶ and there was little need to pack slaves like sardines into the ship's hold.³⁷ All in all, we are looking at a process that need not have involved many middlemen, need not have killed-off many slaves from physical exertion, starvation or disease, and need not have taken a particularly long time (with the attendant effects on food and supervision costs).³⁸

A short hop by sea from Cyzicus or one of the many other Greek ports in Anatolia would have allowed slaves to be dispersed to a wide array of Aegean markets. As is so often the case, Athens is the only such market for which detailed data survive, and it is to this market that we shall presently turn.³⁹ It is worth stating that little is known about the merchants who transported these slaves. The recently discovered speech *Against Timandus* by Hyperides suggests drawing a distinction between the *emporoi* (maritime traders) who brought in the slaves by sea (probably alongside various other commodities) and the *andrapodokapēloi* (slave retailers) who sold them in Attica.⁴⁰ At any rate, let us now consider the sale of our Phrygian once he or she had arrived in Attica.

THE SALE OF SLAVES IN ATTICA

Recently, Braund has written that 'there is no real indication at all in our sources that in Attica, the region we know best, there were specific slave markets or special slave sales.'⁴¹ This statement is problematic, for two reasons. First, what is meant by the phrases 'specific slave markets' and 'special slave sales'? If Braund means a permanent market with auctions, one should note that even in nineteenth-century New Orleans, the hub of slave commerce in the U.S. South, private transactions were only supplemented by a major auction every Saturday; likewise, the slave auction in Salé in Morocco during the eighteenth

century was a once-weekly affair.⁴² Should we expect slave auctions in Athens to have been more frequent? Secondly, although Braund notes several pieces of evidence relating to slave auctions in Athens, he misses one key piece of evidence on their frequency. When it comes to thinking about how our Phrygian would have been sold, we should take into account several options.

Most prosaically, privately negotiated transactions may well account for a large proportion of slave sales. This sort of everyday haggling is presupposed in Theophr. *Char.* 17.6, and an historical instance described in detail in Hyp. 3.3–4; (cf. Men. *Sik.* 2–10).⁴³ In addition to this we should envisage a large monthly auction in the *kykloi* ('circles'), a sub-section of the agora. Aristophanes (*Eq.* 43) describes how Demos bought a Paphlagonian slave on the first day of the month, and a scholion on this line claims that 'on the first of the month slaves were sold and generals were approved by vote.'⁴⁴ This seems to imply a periodic market in slaves such as that known for Baeteocaece in Syria in the time of Antiochus I (or perhaps Antiochus II: *OGIS* 262). But the source is not straightforward: [Arist.] *Ath. Pol.* 61.2 claims that generals were approved every prytany, which does not tie-in with the lunar calendar. It may be the case that the scholiast is reporting a later Hellenistic practice from the period of the twelve tribes. However, Aristophanes (*Vesp.* 169–71) clearly implies that a market existed on the first of the lunar month in the fifth century where live-stock could be sold (cf. Theophr. *Char.* 4.15), and it is most probable that references in Athenian comedy to slave auctions in the *kykloi* should be associated with this monthly market.⁴⁵ This periodic market must have brought together 'big-ticket' items such as slaves and cattle that could not be auctioned in such a volume on a daily basis; by contrast, smaller commodities could routinely be bought in the agora.⁴⁶

We possess some information on the *kykloi* from later writers,⁴⁷ as well as some intriguing snippets from classical comedy that convey a sense of the dread and clamour that slaves faced when auctioned. Aristophanes (339 K–A) has a slave lamenting 'what an ill-starred day it was then, when the auctioneer called "this man's price?" for me!'⁴⁸ Eupolis (fr. 273 K–A) has a character demand that a woman is delivered to him and auctioned.⁴⁹ A Syrian slave in Antiphanes' *Neottis* (fr. 166 K–A) explains how a merchant brought him and his sister to Athens when they were children; when they were put up for auction, a loan shark (*obolostatês*) bought them. And a character in Menander (fr. 150 K–A) worries about being sold, saying 'I already see myself, I swear by the gods, stripped-down in the *kykloi*, hurried about the circle and sold.'⁵⁰ That Menander, Pollux and Harpocration refer to *kykloi* rather than a single *kyklos* implies several simultaneous, adjacent auctions with bidders arrayed in a circle around the slave and auctioneer. Slaves were probably displayed on a platform: Aristophanes (fr. 903 K–A) referred to this as the 'table' (*trapeza*).⁵¹ Finally, we should not forget the sale of slaves by the *pôlêtai*, who must have

auctioned off slaves confiscated by the state in a similar manner.⁵² That is a minimal picture, and we should not rule out the possibility of auctions at markets such as Sounion adjacent to the mining district. Slave sales in Athens were warranted by law to prevent sharp practice and many were recorded to aid proof of title.⁵³ In other words, we are looking at a process that was in no way haphazard, but regular, organised and subject to the laws (and taxes) of the *polis*.

It has already been noted that slaves were sold for comparatively low amounts in Athens. The implications of this fact are significant: low slave prices relative to wages enabled the option of slave ownership to trickle much further down the wealth spectrum in Classical Athens than was the case in other well-known slave societies such as Imperial Rome or the U.S. South. Our price data dovetail well with our information on the distribution of slave ownership from literary and epigraphic texts. Although Attic texts note disparity in slaveholdings between rich and poor (e.g., *Ar. Eccl.* 593), this was much less pronounced than in Rome. The normative upper ceiling lies at around fifty slaves; few individuals could have owned more than this number. But only the poorer elements of the free population will have not owned any slaves.⁵⁴ This pattern of slave ownership fundamentally shaped the Athenian economy; the most obvious explanation is that it was a function of the low prices of slaves, which resulted in turn from a well-organised system of supply and low transport costs. That this supply was clearly capable of meeting high levels of demand is evident in contemporary literature. For example, Xenophon's plans outlined in the *Poroi* to revitalise public finances in the 350s *presuppose* the availability of slave labour on a large scale – to the extent that within several years the state could buy 10,000 slaves for the mines, and buy them cheaply: his computations are based on a price of around 180 drachmas per slave.⁵⁵ Such proposals only make sense against the backdrop of a well-organised and abundant supply of cheap slaves, and do not add up if we suppose that the slave supply was dependent on the staccato injections of bodies into the market implied by any model based largely on warfare and predation by Greeks against non-Greeks. To understand the economic opportunities of which Athenians took advantage by tapping into this source of external supply, it is worth contrasting Attica's slave system with a neighbouring slave system which did not engage with foreign markets to any appreciable degree: Sparta.

THE ATHENIAN AND SPARTAN SLAVE POPULATIONS: RELATIVE STRATEGIES OF SUPPLY

Let us begin by debunking a popular myth: that the Spartan helots were serfs, public slaves, a mixture of the two, or held some mystery status located in the murky area 'between slavery and freedom.' Ducat convincingly argued that the helots, at least during our period, were privately owned slaves, and Luraghi has

recently added several further reasons to believe this to be the case.⁵⁶ That said, the socio-economic organization of helotage was profoundly different to Attic slavery, and even from a legal point of view several state-imposed rules interfered with helot ownership in a way that would have seemed rather odd to an Athenian slaveholder. Helotage is one of the rare examples in world history of a slave population that succeeded in perpetuating itself from generation to generation solely through natural reproduction; we might view it as a historically functional example of self-sufficiency, at least in terms of slave supply. It thus serves as a useful counterpoint to Athens in assessing the degree to which the latter went beyond such self-sufficient strategies.⁵⁷ In lieu of attempting quantification, I aim for now to sketch in the salient factors that shape the demographic dynamics of slave populations; for this, cross-cultural comparison is invaluable.

To understand the factors that affect the demographic performance of slave populations it is perhaps best to turn to the New World, for which detailed data survive, and which has been the subject of sophisticated debate over the last few decades. Despite the fact that all New World slave populations ultimately derived from (mainly Western) Africa, strikingly different demographic patterns can be observed in the individual populations into which these slaves were integrated. The territories that would become the United States (rather surprisingly) imported only a small fraction of the overall number of slaves exported from Africa to the New World, somewhere around 4 percent.⁵⁸ Favourable conditions meant that the U.S. slave population generally grew over time, even after the closure of foreign supplies in 1808.⁵⁹ The reproductive success of the U.S. slave population contrasts starkly with the bleaker demographic performance of regions such as the Caribbean and Brazil, which relied on the regular injections of bodies through foreign trade to maintain overall numbers. A complex nexus of factors explains these differences in performance, and what follows can only be taken as a crude outline, a broad sketch of the most significant variables.

On the negative side, several factors in combination added up to a lethal cocktail in the Caribbean and Brazil. Sugar production was a major component of the slave economies in these regions, and Tadman has illustrated how the regime of sugar growing united many of the variables that cripple the ability of a slave population to successfully reproduce its numbers. One variable is the ratio of male to female slaves; the more top-heavy the quota of males to females, the less likely the population is to reproduce successfully. Sugar production was physically punishing, especially the October to January 'grinding season' which entailed long hours and physically draining tasks. Plantation owners required a largely male workforce,⁶⁰ and the dangerous labour regime heightened mortality and lowered fertility rates; coupled with a hostile disease environment, sugar plantations generally fell on the wrong side of the

reproductive equation. Contrast the situation in the United States, where a combination of different crop types did not create such unfavourable conditions for reproduction either in terms of sex ratios or work regime. Perhaps the key variable accounting for the reproductive success of U.S. slave populations was the ubiquity of the slave family as a social institution. It was this factor, above all, that enabled the U.S. slave population to reproduce itself without depending on external supply. These factors are applicable to antique slave systems, *mutatis mutandis*.

If we look at Sparta's helot population with such criteria in mind, it is not difficult to account for its reproductive success. First, the work regime of the helots was overwhelmingly directed toward traditional Mediterranean polyculture, which is conducive to balanced sex ratios in the workforce.⁶¹ This form of agriculture was not (unlike sugar production in the Caribbean) so physically demanding that it required a predominantly male workforce, nor did it exact crippling mortality rates on the slaves. Secondly, our sources imply that the helots normally dwelt in family groups, like the slaves of the U.S. South.⁶² Thirdly, two rules imposed by the state plugged possible leaks to the helot population: one banned sale outside Spartan territory; another banned private manumission.⁶³ One should note the delicate balance that was required to facilitate maximum chances of reproduction and to nullify the main sources of numerical depreciation. The liberty of the helot owner was more restricted than his Athenian counterpart since the state curtailed his rights to external sale and manumission; and the agrarian basis of the helot economy could not admit forms of economic activity less conducive to successful reproduction. If the balance were upset, engagement in foreign trade would have become necessary were the system to survive. A similar conjunction of agrarian slavery, ubiquity of slave families, low levels of foreign trade and a restricted, militarized citizen body is evident in the patchwork of slave systems found on Crete during the same period, which attracted comparison to Sparta by Aristotle.⁶⁴

EXTERNAL SUPPLY AND THE ATTIC SLAVE ECONOMY

A glance at the occupational structure of Athenian slavery shows how far the Athenians were emancipated from the rigid constraints that applied in Sparta and Crete in terms of the deployment of slave labour. On the one hand, one should not overemphasize alterity: a large number of Attica's slaves laboured in the countryside on tasks not so different from those undertaken by helots.⁶⁵ But other areas of the Attic economy were far less conducive to successful reproduction patterns; we should in particular mention silver, a (literal) cash crop that, like Caribbean sugar, must have had a ruinous impact on slave reproduction. A substantial slice of Attica's slave workforce was engaged in mining, somewhere in the range of 10,000–35,000 by the 340s.⁶⁶ The work regime will

have created a sharply male imbalance in the sex ratio of slavery in southern Attica. Furthermore, not only was the work physically exacting: the Laurion region was a deeply unhealthy locale (Xen. *Mem.* 3.6.12). Attic silver was laboriously extracted from lead ores, and lethal airborne toxins hung over those areas in which processing occurred.⁶⁷ Mining was one activity poorly compatible with a 'self-sufficient' regime of reproduction. Other occupations, such as labouring in *ergasteria*, may have been male-heavy, but female-heavy occupations such as textile production and nursing occurred in the same urban environment. From a hypothetical perspective, then, most of the Attic slave population could *potentially* have reproduced itself, with the exception of the Lavreotiki, where a male-heavy sex ratio was more pronounced. But whether they did or not is contingent on the degree to which slave families were a normative feature in the Attic slave population. Again, Tadman's study can help us to understand the rationale behind slave population dynamics in Attica. In explaining the poor demographic performance of sugar plantations, he writes:

Slavery on its own would not have produced vast regional patterns of natural decrease, and sugar without slavery was not enough, nor was the combination of sugar and slavery without a slave trade. Although labor on sugar plantations could take a heavy toll on health and on fertility, what was lethal was the combination of sugar *with the slaveowners' ability to buy slaves and to choose a male-dominated labor force, rather than being content with family labor*. In other words, the demographic problem stemmed from the priorities of the sugar planter. Sugar planters, unlike the great majority of owners, calculated that they could maximize profits by continually skewing their labor force toward men, and far-reaching demographic and social consequences stemmed from this.⁶⁸

We must be careful with our comparison here. Attica was not a Caribbean sugar colony, and its reproductive performance must have been considerably better than places like Barbados or Bermuda. A significant part of Athens' slave demand was clearly met by 'autarkic' means, as Braund and Vlassopoulos have rightly emphasised in recent studies.⁶⁹ Slaves moved from Phrygia to Athens were not travelling into a highly dangerous disease environment as in, for example, the Caribbean; nor was the work regime as physically debilitating as sugar production, apart from in the Lavreotiki. But we should note two variables highlighted in Tadman's study: gender-skewed forms of production, and access to slave supply. Here, we can make a valid distinction between the structural nature of slavery in Athens and Sparta. In Athens, a man who wanted a maid for his wife could buy a female slave (e.g., Theophr. *Char.* 22.10). If he wanted slaves for a mining concession, he could buy or rent male slaves (e.g., Xen. *Vect.* 4.14). The reliable and high-volume supply of slaves to the Attic market allowed buyers to choose slaves to match the tasks for which

they were destined. There was no need to foster the slave family as a social institution: permission to marry or set up house with another slave could, of course, be granted as an incentive for hard work (Xen. *Oec.* 9.5), and we must reckon with the impulse of most slaves themselves to achieve something of this sort. But it is unlikely that marriage and family was the standard fate of most Athenian slaves, for the slave population seems to have maintained its ‘barbarian’ character over time, and there was no wider need to foster slave families due to labor requirements.⁷⁰ At Sparta, the situation was completely different. Slave families were the prime institution underpinning the labor supply, which necessitated a completely different approach to the utilization of slave labor.

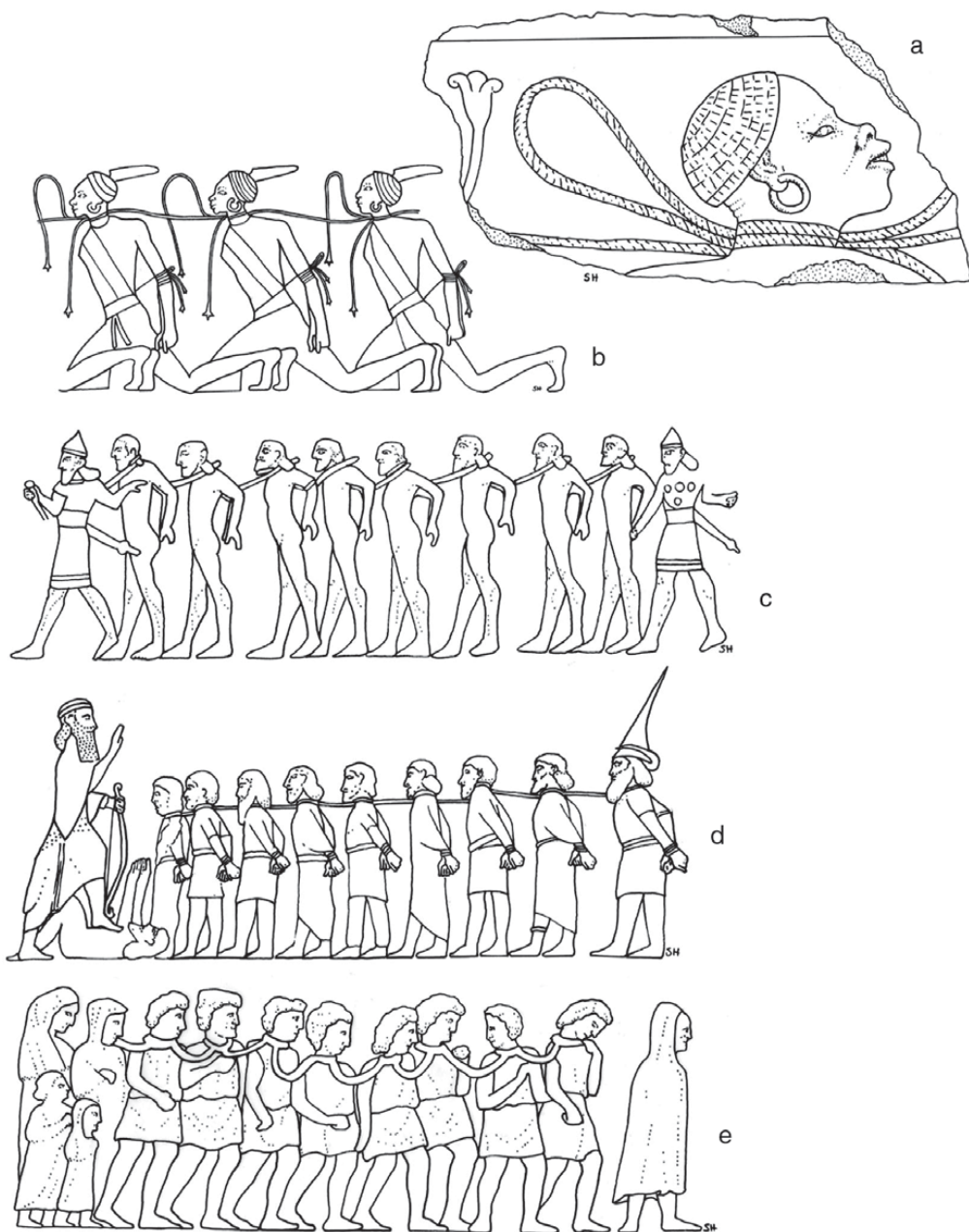
Access to a reliable slave supply gave Athenian slave-owners flexibility and volume in their labor needs. Not only could slaves be employed in a diverse range of tasks regardless of whether these tasks were favourable or not to population reproduction, but access to foreign supply provided choice of skills and scope for expansion. Take, for instance, the Athenian liturgical class. Many of the key sources of wealth for this class were dominated by slave labour, from agricultural production to craft workshops and mining. For an entrepreneurial Athenian setting up a craft workshop or mining concession and aiming to maximize his profits, labour supply was a key variable.⁷¹ Because Athens was connected to extensive inter-regional markets via maritime routes, its economy was effectively plugged-in to levels of demand that well exceeded domestic requirements. This meant that ventures such as craft workshops were able to expand in terms of individual size and aggregate number to meet this demand. If labour supply were restricted, this would have imposed a ceiling on effective expansion, but with a supply of foreign labour that was abundant and flexible, workshop owners were not encumbered with such restraints and could potentially expand their operations within the limits imposed by technology and basic organisational structures (see [Chapter 6](#)). Fine-pottery production is one obvious example: Athens had been producing fine wares for both domestic and foreign markets well before the advent of the Classical period. Or take the production of objects such as shields: the *aspidopegeion* (shield factory) owned by Lysias and Polemarchus must have employed close to 100 slaves (Lys. 12.19), and Pasion’s shield factory perhaps 60–70 (Dem. 36.11).⁷² It is clear that these establishments were not producing to meet piecemeal local orders but were churning out large numbers of shields that could be sold in foreign markets.⁷³ Here we can see how the slave supply, whose tendrils reached into the interior of Thrace, Anatolia and beyond, interlocked with Athens’ export trade in manufactured goods and silver. The latter simply could not have existed without the former; nor could it have expanded as it did on a home-grown helot-style population: cheap imported labour from Phrygia, Paphlagonia, Caria, Thrace and a range of other regions was the essential ingredient.⁷⁴

SOME REFLECTIONS ON AUTARKY AND THE SLAVE SUPPLY

As is so often the case, the nature of our evidence has meant that the focus of this chapter has fallen on Athens and Sparta: the scope of the literary sources inhibits the construction of the kind of textured and diverse description possible from evidence such as coins (Chapter 4) or amphoras (Chapter 9) where other *poleis* enter the picture prominently. Slavery, as is well known, is archaeologically invisible; and this limits the historian's horizon principally to Athens in considering this topic.⁷⁵ With such constraints in mind, to what extent should we regard the slave systems of Athens and Sparta as typical, if at all? Recent work has rightly emphasized the great diversity in socio-economic and political structures within the 1,000 or so *poleis* that existed during the classical period; it would be ill-judged to sort *poleis* into one or the other camp based on Athenian or Spartan paradigms. On the other hand, much of the discussion in this essay has sketched in general principles which should be more broadly applicable. Were we to arrange Greek slave systems along a spectrum of commercialization, with high levels of integration with foreign markets at one pole and effective isolation at the other, Athens and Sparta would likely be located at these hypothetical extremes. One should bear in mind that any Greek slave system of reasonable scale will have utilized a mixture of natural reproduction and external supply, and it is between these extremes – exemplified by Athens and Sparta – that most systems probably lay. However, I suspect that the majority of *poleis*, especially on the more commercialized Aegean coast and islands, would cluster towards the Athenian end of any such spectrum, the reason being that 'self-sufficient' slave systems such as Sparta's were clearly rare. Fourth-century writers viewed them as controversial oddities; very much *not* the norm, these were contentious systems chiefly because their levels of linguistic uniformity apparently enhanced their ability and proclivity to revolt.⁷⁶ As for systems whose supply depended to varying degrees on foreign imports, there is no reason to view Athens' slave population as normative. The ethnic texture of slave populations in different regions will have varied given proximity to suppliers, local economic conditions and modes of exploiting the landscape, as well as connections to markets seeking slave-produced goods. The Athenian system sketched in this chapter has to be seen as one part of a much larger and more complex picture. But despite the limitations of our evidence, it is clear that in terms of slave supply – as with strategies for acquiring other commodities – Athens and most other Aegean communities had progressed a long way from self-sufficiency.⁷⁷

APPENDIX: THE OVERLAND TRANSPORT OF SLAVES

During antiquity one extremely widespread and long-lived means by which slaves or captives were transported overland was by coffle.⁷⁸ Individuals would



14.1 Slave Coffles (drawings courtesy of S. Holzman).

be roped or chained by the neck to another slave; repeated iterations would create a string of slaves linked together. The images here (Figure 14.1) show how widespread this simple but effective method was. Although most of these images derive from royal monuments showing recalcitrant enemies being brought to heel rather than everyday images of the slave trade per se, they show the widespread diffusion of the technology of coffle-transport across the

ancient world. Any notion that this technology is merely an artistic device and was not adopted by slave traders cannot be seriously credited.

Proceeding top to bottom: in image (a) an African is shown bound by the neck (Egypt, eighteenth dynasty, St. Louis Art Museum USA); (b) shows a coffle of Nubian captives depicted on Ramses II's temple at Abu Simbel (thirteenth century BCE). An almost identical operation is depicted on the reliefs from the door-fittings of the ninth-century Assyrian king Shalmaneser III (c). The closest example to our period is the image of captive rulers being led before the Persian king Darius I on the Behistun Inscription (d, late sixth century BCE). Similar images can be found across the Near Eastern world on Achaemenid seals.⁷⁹ But this was not just an eastern practice: physical remains of neck-chains have been excavated in Wales dating to shortly before the Roman invasion.⁸⁰ Perhaps the most well-known image comes from the gravestone of a slave trader named Aulus Kapreillios Timotheus, who operated in the Strymon area in the first century CE. In this depiction, the slave trader leads a coffle of eight slaves (e). The same basic method of overland transport was used in the U.S. South. Its widespread use and long popularity owe to several advantages: first, it is cheap. Slaves moved this way not only require no vehicular transport, but can also be used as porters for other goods. Secondly, it requires few individuals to guard the slaves relative to the number of slaves in the coffle. Thirdly, it is highly mobile, and unlike other forms of overland transport does not need to move over purpose-built roads. It is impossible to determine how many slaves would normally make up a coffle: Bodel⁸¹ suggests that numbers in antiquity might have been comparable to the thirty to forty average in the United States; interestingly, this does fit with the group of thirty slaves being led away after the sack of Olynthus in Dem. 19.305–306, but it would be a mistake to generalise confidently from this lone figure.

NOTES

- 1 For the term see Scheidel 2008: 105, note 1.
- 2 Sekunda 1985; 1988; 1991; Dusinberre 2013, 32–113.
- 3 Shaw 1990: 207–17; Dusinberre 2013, 46–7.
- 4 Xen. *Hell.* 3.1.13; *An.* 1.2.1; 2.5.13; 3.2.23; *Mem.* 3.5.26; *Hell. Oxy.* 21.1; Arr. *Anab.* 1.25, Strattis fr. 36 K–A.
- 5 I discuss this more fully in Lewis 2011. Briefly: a great deal of evidence for the ethnic origins of slaves comes in the form of names from Attica. These are problematic, but not in the ways most scholars have thought. These names appear in literary generalizations and a number of epigraphic texts; the latter, like archaeological test pits, provide us with several random samples which free us from the dangers of generalizing from a single sample; the ethnic groups attested therein show some degree of consistency, with Thracian and Phrygian ethnics as the most significant. This evidence affords us a crude index of the more important non-Greek suppliers of slaves to Attica, but does not permit us to calculate statistics nor to observe fluctuations in supply diachronically.
- 6 In a recent study of Athenian slave names, Vlassopoulos 2010 shows that the Phrygian ethnic name Manes is statistically the most common appellation; his findings support the argument

of Lewis 2011 that Anatolian and Syrian ethnics are every bit as common as Thracian and Pontic names, if not more so. Hermippus also refers to slaves imported from the Thessalian port of Pagasae, as well as ‘tattooed men’ (*stigmatias*). For a remarkable story concerning a tattooed man from Thessaly, see IG IV² I 121, lines 48–68 (c. 350–300 BCE).

- 7 Patterson 1982: 105.
- 8 Garland 1987: 20.
- 9 Rosivach 1999: 155, note 105.
- 10 Braund 2011: 118–23.
- 11 See Patterson 1982: 117–18.
- 12 Lewis 2011: 105.
- 13 De Vries (1996): 453. During the Achaemenid period Phrygia exhibited many of the hallmarks of a collapsed state: see Thonemann (2013): 8–15. The infrastructure of the earlier Iron Age Phrygian state had long disappeared, and what had replaced it seems to have crumbled in the face of the Persian advance, leaving a more egalitarian but also a more vulnerable society; Persian fiscal interference was less pronounced in this satrapy, as the relatively low tribute yields bear out: Dusiñberre (2013): 35–42. As Thonemann (2013: 15) states, ‘To put it crudely, for a Phrygian villager in 400 BC, the risk of being carted off as a slave to the Athenian silver-mines was offset by the certainty of never having to pay tax to anyone.’
- 14 De Vries 1997: 449–50. For Greek transport amphoras at Gordion, see Lawall 1997, who does chart a slight decline in Chian amphora imports during the fifth century.
- 15 Ezekiel 27:13 with Block 1998: 72–3 (I owe the latter reference to Davies, Chapter 13 in this volume).
- 16 ‘Medices et Aesepus hominess de republica optime meriti; quia non ipsis, sed liberis honores tribuuntur, illos pro patria mortem oppetiisse probabile est’ (*SIG*³ p. 5).
- 17 Rubinstein 2009.
- 18 Slaves: Hermippus fr. 63 K–A. Phrygia was noted for its cavalry, and must have bred many horses: Xen. *Ages.* 1.2; *Hell.* 3.4.15; *Cyr.* 7.4.10. Central Anatolia also produced horses for the Levantine market during the early sixth century: Ezekiel 27:14 with Block 1998: 73–4.
- 19 One should not underestimate the importance of such revenues to a state that did not impose direct taxation on its citizens. Cf. Zanzibar at the end of the eighteenth century – this island’s revenues were predominantly derived from taxes on slave sales: see Beachey 1976: 38. For the importance of import/export taxes to *polis* revenues, see Bresson 2000: 243–61.
- 20 This is pure guesswork, but it seems to me that the most likely interpretation is that Aisepos is the legendary ancestor of Manes’ family. That would explain why he is not separately awarded honours in the inscription and would fit an interpretation of Manes as a local dynast or ‘big-man.’ Aisepos is the name of a river not far from Cyzicus, which may suggest local connections.
- 21 Mirko Canavaro suggests to me that Manes may have been a foreigner who was a naturalized citizen of Cyzicus; this is quite possible, but does not affect the argument pursued here.
- 22 Cf. Woolmer, Chapter 3 in this volume.
- 23 Even Finley, whose view that the ancient economy was undeveloped is well known, thought that barbarian slaves were mainly obtained through trade with local ‘big men’ (as argued here) rather than predatory raids on natives (Finley 1968a: 172). Such raids may have been more significant during the period of colonial settlement than later (Rihll 1993).
- 24 A similar pattern is observable for other reservoirs of supply. See Gavriljuk 2003 on Scythia, who emphasizes peaceful trade between Greeks and non-Greeks, and Avram 2007a: 247, who draws attention to a Thracian king’s haul of 1,000 slaves from a neighboring tribe and his arrangements to sell them (Xen. *An.* 7.4.2). For the exchange of salt for slaves in the Thracian hinterland, see Carusi, Chapter 15 in this volume. On the export of slaves from the Thraceward region see Archibald 2013: 118–23; 126–8.
- 25 See *supra* note 4. For other ‘mechanisms of enslavement’ see Lewis 2011: 108–9 for speculative suggestions.

- 26 Scheidel 2005 with the corrections of Tordoff 2011: 31, n. 176. For the Babylonian slave system, see Dandamaev 1984. For slave prices, see Jursa 2010: 741–5 and the comments of Dandamaev 1984: 246–8. Crawford 2010 argues that slave prices remained stagnant throughout antiquity; against this view, see Harper 2010, who argues for fluctuations due to differences in demand and supply, which is surely correct (cf. Introduction to this volume). Even if Crawford's arguments are accepted, it does not follow that slaves in Athens were not cheap from a comparative-historical perspective.
- 27 For Chios, Ephesus, Clazomenae and Abydos as slave markets, see Aristophanes fr. 556 K–A.
- 28 See appendix to this chapter for iconographic evidence for the use of coffles.
- 29 This was the normal distance a coffle could travel in the U.S. South (Johnson 1999: 50), which I take as a rough figure applicable to other times and places.
- 30 That is, the 400 km mentioned by De Vries 1997: 447.
- 31 See Beachey 1976: 190 for the condition of slaves who had walked over 1,000 miles and faced a further 250-mile journey to the Indian Ocean.
- 32 The slaves could themselves act as porters for other commodities. This is a practice well attested in the West African slave trade; in the fictional journey of Aesop from Phrygia to Ephesus (*Life of Aesop* 2) the slaves carry provisions for the journey.
- 33 On the rates of harbor taxes in the Aegean, see Vélissaropoulos 1980: 205–31. For the effect of taxes on merchants' profit margins, see Gabrielsen 2007.
- 34 Braund 2011: 115 is surely correct in inferring that the original purchase price for such slaves in their country of origin must have been low.
- 35 Cf. Trümper 2009: 16, note 70. For the fluctuation of prices across all commodities due to supply and demand (and not just grain, as the minimalists would have it), see the Introduction to this volume. For the sailing season, see Casson 1971: 270–3.
- 36 For journey lengths, see Eltis 2000: 124.
- 37 Pace Bradley 1987: 61, note 25, one cannot posit similar conditions to the 'middle passage' for the ancient Mediterranean – and particularly not for the shorter Aegean routes. Mortality levels on the middle passage are discussed in Klein *et al.* 2001. For transport costs in the Atlantic slave trade, see Eltis 2000: 114–36.
- 38 For low transport costs see also Gavriljuk 2003: 79–80.
- 39 Outside Attica, the evidence is sparse. However, that which we possess suggests a comparable pattern of slave imports across the Aegean world. From fifth century Chios, we have two inscriptions listing slaves who, from their nomenclature, seem to be for the most part Anatolians (Robert 1938). Bresson 1997: 124 discusses the evidence from Hellenistic Rhodes and argues for onomastic similarity (or continuity) on the Attic model. Bresson's dossier includes a number of Anatolians, but also slaves from Egypt, Thrace, Armenia and the Black Sea. The evidence from the Delphic manumissions shows a comparable range of non-Greek ethnic groups in mainland Greece (Velkov 1967: 78).
- 40 Jones 2008. Harp. (s.v.) explains the term as an old-fashioned version of *sômatemporos*, and mentions that it appears in an (now lost) oration of Isaeus. More evidence exists for the Roman world (Bodel 2005).
- 41 Braund 2011: 122.
- 42 New Orleans: Johnson 1999: 54; Salé: Milton 2004: 68–70. Cf. Trümper 2009: 2–19, whose cross-cultural overview of slave markets concludes (p. 15) 'purpose-built slave markets were overall rare; instead, slaves seem to have been mostly traded in convenient existing and multifunctional locations.'
- 43 For the statement in the new Hyperides *Against Timandros* that slave dealers normally tried to sell slave families *en bloc*, see Jones 2008 with the comments of Harper 2011: 261. However, such statements are unlikely to be entirely rhetorical bluff: see Schmitz 2011.
- 44 ἐν ταῖς νομηνίαις οἱ δοῦλοι ἐπωλοῦντο καὶ οἱ στρατηγοὶ ἐχειροτοῦντο.
- 45 In fact we find slaves named Νομήνιος in *IG* I³ 1032 at lines 254, 350 and 389. Cf. Lambertz 1907: 65 ('Der Sklave kann nach dem Tage des Monats heißen, an dem er geboren oder gekauft wurde'). For *kykloi* and auctions see Moretti, Fincker and Chankowski 2012.

- 46 The *kykloi* were otherwise normally used for the sale of utensils: Poll. 10.18.
- 47 Poll. 7.11: καὶ κύκλοι δὲ ἐν τῇ νέᾳ κωμῳδίᾳ καλοῦνται ἐν οἷς πιπράσκειται τὰ ἀνδράποδα ‘and in New Comedy the place in which slaves are sold are called *kykloi*’; Harp. s.v. *kykloi*: ἐκαλοῦντο οἱ τόποι ἐν οἷς ἐπωλοῦντο τινες. ὠνομάσθησαν δὲ ἀπὸ τοῦ κύκλω περιεστάναι τοὺς πωλουμένους ‘what they called the places in which certain persons were put up for sale, so called because those being sold stood in the circle.’
- 48 οἱμοὶ κακοδαίμων τῆς τόθ’ ἡμέρας, ὅτε εἶπέν μ’ ὁ κῆρυξ οὔτος<ὶ τί> ἀλφάνει; For the assumption that being an auctioneer was a shabby job, Theophr. *Char.* 6.5; cf. Dem. 44.4.
- 49 οὐ θάττον αὐτὴν δεῦρὸ μοι τῶν τοξοτῶν ἄγων ἀποκηρύξει τις ὃ τι ἀλφάνοι; ‘make haste and bring her here to me from the archers, and have her auctioned with “what’s the bid?”’
- 50 ἐγὼ μὲν ἦδη μοι δοκῶ, νῆ τοὺς θεοὺς, ἐν τοῖς κύκλοις ἑμαυτὸν ἐκδεδυκότα ὄραν κύκλω τρέχοντα καὶ πωλούμενον. One might interpret τρέχοντα as meaning ‘forced to exercise,’ cf. Milton 2004: 69 in relation to the Salé market: ‘now, they were stripped and put through their paces. They were forced to jump and skip to test their agility.’ Cf. Xen. *Hell.* 3.4.19; *Ages.* 1.28.
- 51 Descat 2012: 204.
- 52 See Pritchett 1953; Pritchett and Pippin 1956.
- 53 Law on warranty: Hyp. 3.15 (cf. Pl. *Leg.* 11.916a; *SEG* 47:1026; *IC* IV 72 VII lines 10–15). Records of slave sales: Hsch. s.v. *en leukomasi*. Slave-sale contract produced in court as evidence: Lycurg. *Leoc.* 24; tax: Xen. *Vect.* 4.24.
- 54 Xen. *Mem.* 2.3.3 implies that some people do not have slaves to help them in their work. For fifty slaves as an upper normative limit of holdings for the rich, see Pl. *Resp.* 9.578d–e; cf. Men. *Kolax* 38. This dovetails with the range of figures preserved in the orators: Dem. 27.9 (two groups of slaves: 32–3 knife makers and 20 couch makers); Dem. 37.4 (30 mine slaves); Lys. 12.19 (120 slaves co-owned by Lysias and Polemarchus).
- 55 Scheidel 2005: 11.
- 56 Ducat 1990: 19–29; Luraghi 2002: 228–33. This is not the place to deal at length with this question; for one thing, the issue of status is not essential for the analysis of this section, but see my comments in Lewis 2013: 393–5. I shall set out my position in more detail in Lewis, forthcoming, chapter 6.
- 57 By this I do not mean to imply a teleological view of the evolution of slavery in Greece, viewing helotage as an earlier ‘stage.’
- 58 To be precise: computation of the percentage of slaves exported to North America in relation to the Americas as a whole, using David Eltis’s online *Trans-Atlantic Slave Trade Database*, yields a figure of 3.83064%.
- 59 Fogel and Engerman 1974: 23 write ‘native-born blacks made up the majority of the slave population in the U.S. colonies as early as 1680. By the end of the American Revolution, the African-born component of the black population had shrunk to 20%. It hovered at this share from 1780 to 1810 and then rapidly headed toward zero.’
- 60 Tadman 2000. For the demands of the labor sector to influence the gender ratios of a slave population, cf. Origo 1955 who shows that Medieval Italian demand for domestic slaves created a female-heavy population.
- 61 Harper 2011: 76–7. For the work of helots and the structure of helotage ‘on the ground,’ see Hodkinson 2008.
- 62 Hodkinson 2008: 309–18.
- 63 Ephorus *FGrHist* 70 F 117 with Luraghi 2002: 228–9.
- 64 On Cretan slavery in comparative perspective, see Luraghi 2009. Close analysis of Gortyn in Lewis 2013; overview of Gortynian slave status in Lewis forthcoming, chapter 7.
- 65 Luraghi 2002: 230–1; Hodkinson 2008: 306.
- 66 Though Rihll 2010: 216 notes that Lauffer’s estimate of 35,000 ‘is at the higher end of the spectrum of possibilities.’

- 67 Rihll 2001: 123 and *passim*.
 68 Tadman 2000: 1538 (my italics).
 69 Braund 2011: 125–6; Vlassopoulos 2010: 130.
 70 See further Schmitz 2012.
 71 For profit-maximizing motives in Athens, see Christesen 2003. For the importance of skilled workers in the Lavreotiki, see Rihll 2010.
 72 Estimate by Davies 1971: 433–4.
 73 That conclusion follows from the stockpiles of shields Pasion possessed from which he made lavish gifts to the state; see Dem. 45.85 with *IG II²* 1424a, lines 128–9, 139–40. Edward Harris also points out to me that in Dem. 36.11, Pasion's shield factory is seen as a reliable enterprise with a regular and predictable income. On keeping track of incomings and outgoings, see Faraguna 2008.
 74 If I am correct in supposing that the Chian wine exported to Gordion was in many cases exchanged for slaves, this suggests a comparable pattern: the key role of imported slave labor in Chian viticulture has been convincingly argued by Cartledge 1985: 35–6. In other words, the products of slave labor in Chios went directly towards purchasing new slaves and perpetuating Chios' slave economy.
 75 Regarding the archaeological invisibility of slaves, Morris 1998 attempts to show from the lack of Thracian and Phrygian style housing and pottery in the Lavreotiki that the slaves resident there had lost – to some degree – their native identities. His argument unravels, however, once we realize that there is no evidence to suggest that the slaves manufactured their own pottery or constructed their own houses.
 76 On the issue of revolt, see the fine analysis of Cartledge 1985. Van Wees 2003 argues that systems such as these were widespread, but his view is untenable: such systems constituted a brief list, and several additions to this list made later in antiquity were spurious (see Lotze 1959: 53–6); clearly the lists of Plato, Aristotle or even Pollux do not represent the tip of an helotic iceberg. The criterion that Van Wees uses to greatly expand these brief 'helotic' lists mainly lies in the slave system in question having an odd or distinctive name. On helotage in comparative perspective, see Luraghi 2009.
 77 I would like to thank the audience at the *Beyond Self-Sufficiency* conference for their questions and comments on an early version of this paper. Edward Harris, Mirko Canevaro, Lloyd Llewellyn-Jones and P.J. Rhodes all read drafts of the essay and offered helpful suggestions. I also thank Christopher Tuplin for allowing me to read his forthcoming essay on military iconography in the Persian Empire. Special thanks are due to Samuel Holzman, who produced the illustrations and has been a valuable source of advice on Achaemenid Anatolian archaeology. This chapter is dedicated to Donald Murray, who first fired my interest in Persian studies.
 78 For moving captives in wagons, see Xen. *Hell.* 3.3.9.
 79 Christopher Tuplin is currently preparing a comprehensive catalogue of military activity on Achaemenid-era seals.
 80 Thompson 1993.
 81 Bodel 2005: 187.

'VITA HUMANIOR SINE SALE NON QUIT DEGERE'

Demand for Salt and Salt Trade Patterns in the Ancient Greek World

Cristina Carusi

Before tracing the patterns of the trade in salt, it is first necessary to discuss the factors that generated these patterns. In this chapter, I start by estimating the demand for salt generated both by dietary consumption and by other productive activities. By comparing the level of demand with the availability and production of salt around the Mediterranean, it is possible to trace the main trade patterns generated by this interaction. As part of my analysis of the demand for salt, I will discuss the topic of fish processing, one of the most important and best documented productive activities in which salt was involved.

For any given community, the demand for salt is created by the dietary needs of the population and by the use of salt associated with productive activities: mainly animal husbandry and fish processing and, to a lesser extent, metallurgy, tanning, and the production of perfumes and ointments. The consumption of salt is essential for the health of the human body. In most societies, however, the amount of salt strictly necessary for the biological activities of cells and tissues is much smaller than the amount of salt actually consumed. Today, for example, according to estimates for European societies, the average individual consumption is ca. 3.2 kg of salt per annum, compared to the minimum of 1 kg strictly needed by the human body.¹

The reason for this preference for salt was already clear to the ancient authors. The consumption of salt is not only a biological necessity, but also a matter of taste, whose importance must not be underestimated. This view is stated explicitly in one of Plutarch's *Table Talks* (4.4). Here the tablemates come to the conclusion that salt is the most essential and irreplaceable condiment

and serves as the main way to stimulate the appetite and make all kinds of food palatable. Indeed, hardly anything is edible without salt. The passage goes on to compare the function of salt to the role of hope for life and the role of light for colors: just as life is unbearable without hope, and colors cannot be perceived without light, in the same way flavors are disagreeable and nauseous to the taste without salt (*Mor.* 668d-f).

This was particularly true in antiquity, when cereals were by far the dominant components of the standard diet, providing ca. 70–75 percent of the caloric intake, and salt was even more essential to make palatable a particularly insipid and monotonous diet.² It is therefore no surprise that in another passage in the *Table Talks* (5.10), Plutarch states that the reason salt has been labeled ‘divine’ is because ‘men consider divine the common things which most completely support their practical needs, like water, light, and the seasons ... salt is inferior to none of these in usefulness. It serves as a kind of finishing touch or coping to the meal for the body, and adapts the food to our appetite’ (*Mor.* 685a-b, trans. Hoffleit). In this sense, adapting the food to the appetite – now as then – must be considered a primary need of the human being, not so much for ‘living’ in its narrowest sense (i.e., to assure the proper functioning of the human body), but for ‘living a life worthy of a human being,’ to put it in Pliny’s words (*HN* 31.88: *ergo, Hercules, vita humanior sine sale non quit degere*).

As a number of sources attest, the Greeks considered the consumption of salt a distinguishing trait of civilized life in contrast to ‘marginal’ and ‘alien’ peoples, who knew nothing of salt or used poor substitutes to flavor their food. One need only recall the first mention of salt in Greek literature – in the well-known prophecy of Tiresias concerning the fate of Odysseus – to emphasize the distance, in both geographical and cultural terms, between the Greeks and the peoples that Odysseus was ordered to visit in order to expiate his crimes against Poseidon. Tiresias called them ‘men that know nothing of the sea and eat their food unmixed with salt, who in fact know nothing of ships with ruddy cheeks, or of shapely oars, which are a vessel’s wings’ (*Od.* 11.121–5, trans. Murray).³

These passages reveal how taste and culture played a more prominent role in creating the demand for salt than biological needs and why the amount of salt consumed was much higher than the quantity strictly required for the functioning of the human body. In fact, the per capita consumption of salt in antiquity was decidedly higher than at present. Not only was salt an essential component of an otherwise insipid and monotonous diet, but even more important, salt was crucial for food preservation and, as such, was abundantly employed in the preparation and storage of several kinds of food at the household level.

A good indication of the individual consumption of salt in antiquity can be seen in the ration of salt allocated to slaves by Cato the Elder, that is, 1 *modius*

TABLE 15.1. *Salt Consumption in the Greek City-States*

	Estimated population size	Estimated salt consumption
Athens, 5th c.	over 300,000	2,600 m ³ , ca. 50,000 <i>medimnoi</i>
Athens, 4th c.	200,000–250,000	1,750–2,170 m ³ , ca. 33,600–41,700 <i>medimnoi</i>
Argos, 4th c.	70,000	600 m ³ , ca. 11,500 <i>medimnoi</i>
Megara, 5th c.	30,000	260 m ³ , ca. 5,000 <i>medimnoi</i>
Ambracia, 5th c.	30,000	260 m ³ , ca. 5,000 <i>medimnoi</i>
Corcyra, 5th c.	55,000	480 m ³ , ca. 9,200 <i>medimnoi</i>
Eretria, 4th c.	15,500	135 m ³ , ca. 2,600 <i>medimnoi</i>

per capita per annum, equal to ca. 8.7 liters (ca. 1/6 of an Attic *medimnos*).⁴ Even if the difference between contemporary and ancient consumption – ca. 2.5 liters (corresponding to ca. 3.2 kg) against ca. 8.7 liters – appears excessive in view of unchanging biological needs, the fundamental differences between contemporary and ancient diets is a sufficient factor to account for such different levels of consumption.⁵ This is why, in order to assess the demand for salt in an ancient community, Cato's ration is far more reliable than any other data extrapolated from the consumption of salt in contemporary societies.⁶

If we combine Cato's ration with the estimated population sizes of some Greek cities of the Classical age, we can try to assess, for a given community, the demand for salt generated by dietary needs. For convenience's sake, the figures in Table 15.1 consider dietary consumption as including all culinary uses of salt, such as flavoring, cooking, and preserving food (within the household), regardless of the amount of salt actually consumed. As is always the case when estimates are made with so many unknown variables, the numbers presented here are meant to give nothing more than a rough approximation of the actual level of demand.⁷

One should bear in mind that Athens must be considered an unusual city because the size of its population was far greater than any other contemporary Greek city. In fact, it has been calculated that out of approximately 1,000 *poleis* in existence in the fourth century, only 10 percent had a population larger than 27,000 inhabitants.⁸ In this respect, only 100 cities or so would have generated a demand for dietary needs higher than ca. 235 m³ (ca. 4,500 *medimnoi*).

Unfortunately, it is much more difficult – if not impossible – to estimate the demand for salt generated by other productive activities. As far as animal husbandry is concerned, for example, the unknown variables do not involve the dietary needs of the animals, which can be extrapolated from modern data, but the overall scale of livestock bred in a given community. In the most recent

studies on animal husbandry the prevailing idea is that in the ancient Greek world the practice and scale of stock raising varied according to three different geographical and climatic regions. In southern Greece, including Attica, the Cyclades, and southern Ionia, the scale of stock raising was less significant, but more closely integrated with agriculture. In Crete and central Greece, including the Peloponnese, Thessaly, and Aeolis, environmental conditions allowed for a more significant presence of stock raising, especially in the mountainous areas along the borders of the civic space. It was only in Macedonia and north-west Greece that environmental and political conditions allowed for the development of extensive stock raising, often associated with forms of large-scale transhumance.⁹ In Attica, for example, where people were able to evacuate their livestock to Euboea on the eve of the Peloponnesian War (Thuc. 2.14), one can estimate that the number of animals was no higher than a few tens of thousands. If one assumes 10 g per day for one sheep, equivalent to 3 liters per year, the amount consumed by the animals can be estimated at a few hundred cubic meters per year – a figure much lower than the estimated human consumption.¹⁰ We can infer that in a community in which stock raising was not practiced on a large and extensive scale the dietary needs of the livestock did not affect in a significant way the size of the aggregate demand for salt.

Leaving aside the salting of fish, which I will take up later, we do not have enough data to estimate the demand for salt for other productive activities in which salt played a major role.¹¹ Nevertheless, we can apply this inference about stock raising more widely: when, in a given community, the scale of these activities (e.g., metallurgy, tanning, production of perfumes and ointments) was not considerable, it is probable that human consumption accounted for almost the entire demand for salt.

The next step is to discuss the general availability of salt in the ancient Greek world. Around the Mediterranean basin, geographical and climatic conditions, including elevated salinity of the water, dry and windy climate, and configuration of coasts, were – and in part still are – extremely favorable to the spontaneous formation of salt.¹² Those areas in which coastal flooding tends to form lagoons, marshes, and coastal lakes constitute the ideal environment for the production of salt. Even though in recent centuries human intervention has drastically changed the physical features of the coasts through drainage, land reclamation, and industrial or touristic exploitation, this type of landscape was very common in the ancient Mediterranean, as both ancient authors and paleo-environmental analyses attest.¹³

Because the majority of Greek settlements were located near the coastline or only a short distance from it, it is not far-fetched to assume that the majority of Greek communities had access to a supply of salt. In fact, it is clear that ancient authors associated salt with the sea. The prophecy of Tiresias mentioned previously shows that for the Greeks distance from the

coast implied the absence of salt (*Od.* 11.122–37). In the same way, one of the long conversations about salt in Plutarch's *Table Talks* takes place in the context of a general discussion about the superiority of sea products over land products (*Mor.* 668d–669b).¹⁴ In fact, a detailed survey of a wide variety of sources has recently shown that the production of salt was generally widespread throughout the Greek world and the Mediterranean, with seawater being its main source.¹⁵

In the only surviving ancient treatise about salt, Pliny reports that salt can be either native or artificial: native salt comes from salt mines as well as from the solar evaporation of saltwater, including the desiccation of seawater on the shore, while the most common and abundant type of artificial salt is that made from seawater drained into salt-works and then leached by streams of fresh water.¹⁶ Pliny's categories, probably derived from Theophrastus, no doubt reflect the range of the productive systems available in antiquity.¹⁷

Part of the household demand for salt certainly could be met by harvesting salt spontaneously formed along the coast or by the use of seawater, sometimes aided by a process of domestic evaporation.¹⁸ In the early decades of the twentieth century, Cretan peasants used to harvest and sell the salt that formed naturally in the rocky hollows of the coastline.¹⁹ This ethnographic parallel suggests that the harvesting of spontaneous salt, besides meeting internal needs, could even provide the household with a certain surplus to sell on the market. In its broad features, the process was similar to the activity of the charcoal burners who operated in the common public woodlands of the Greek cities.²⁰

The harvesting of salt along the coast, however, could be practiced only by households with easy access to the sea. In a large region like Attica, for example, where many households were probably located inland, only a small part of the population was able to engage directly in the collection of salt. The rest surely had to engage in market exchange and buy their household supply from producers or retailers.

At the other end of the productive range, there was salt produced in artificial salt-works, whose structure and functioning, to judge from literary and archeological sources, were remarkably similar to those of modern salt-works.

Modern salt-works usually consist of a series of shallow basins, separated by dykes, into which seawater is conducted, either through a system of canals and gates that exploit the slope of the terrain, or by way of water-lifting devices. Since seawater contains several impurities and different salts, evaporation must proceed in stages. For this reason, the water is run through a series of progressively smaller basins where, as evaporation proceeds, the less soluble salts precipitate and the brine reaches the desired degree of concentration. When sodium chloride crystals are formed on the surface of the brine – in the Mediterranean climate the process may take from 80–100 days – salt is harvested. Finally, the harvested salt undergoes a process of leaching by fresh water to remove the

most soluble impurities, in particular the residual magnesium that gives salt a bitter taste.

The only descriptions we have of the structures and functioning of ancient salt-works are in Marcus Manilius' *Astronomica* (5.682–92) and in Rutilius Namatianus' *De reditu suo* (475–90).

In the *Astronomica*, dated to the first century CE, the description of salt-works is included in the discussion of the influence that stars exert over men's life and inclinations:

Moreover, such men will be able to fill great salt-pans, to evaporate the sea, and to extract the sea's venom: they prepare a wide expanse of hardened ground and surround it with firm walls, next conduct therein waters channeled from the nearby sea and then deny them exit by closing sluice-gates: so the floor holds in the waves and begins to glisten as the water is drained off by the sun. When the sea's dry element has collected, Ocean's white locks are shorn for use at table, and huge mounds are made of the solid foam: and the poison of the deep, which prevents the use of sea-water, vitiating it with a bitter taste, they commute to life-giving salt and render a source of health. (trans. Goold)

In Namatianus' *De reditu suo*, dated to the fifth century CE, the author narrates his journey from Rome to Gaul along the Tyrrhenian coast. Unlike the case with Manilius, the salt-works he describes are not a generic example, but the actual salt-works belonging to the villa of his friend Albinus at Vada Volaterrana (Tuscany):

We find time to inspect the salt-pans lying near the mansion: it is on this score that value is set upon the salt marsh, where the sea-water, running down through channels in the land, makes entry, and a little trench floods the many-parted ponds. But after the Dog-star has advanced his blazing fires, when grass turns pale, when all the land is athirst, then the sea is shut out by the barrier-sluices, so that the parched ground may solidify the imprisoned waters. The natural incrustations catch the penetrating sun, and in the summer heat the heavy crust of salt cakes, just as when the wild Danube stiffens with ice and carries huge wains upon its frost-bound stream. Let him who is given to weigh natural causes examine and investigate the different effect worked in the same material: frost-bound streams melt on catching the sun, and on the other hand liquid waters can be hardened in the sun. (trans. J. Wight Duff & A. M. Duff)

Even if both descriptions are expressed in poetic language, the basic elements they reveal are perfectly consistent with the structure and functioning of modern salt-works. We can observe, in particular, the mention of channels exploiting the slope of the terrain (*mare terreni declive canalibus intrat*); many-parted ponds fed by a trench (*multifidosque lacus parvula fossa rigat*); hardened ground and firm walls (*solidum campum; certo margine*); sluices and gates to regulate the

water flow (*cataractarum claustris excluditur aequor; claudendoque negant abitum*); the solar heat causing the evaporation of seawater and the formation of a crust of salt (*crusta; canities semota maris*); and the harvested salt piled up along the borders of the salt-works (*ingentes faciunt tumulos*), where it was usually left to leach in the rain for some time.²¹

In addition to this, Vitruvius (10.4.1–2) explicitly mentions a water-lifting device called *tympanum* – a waterwheel with a compartmental body turned by the tread of men – which was used to irrigate gardens and supply the needs of salt-works (*ad salinas temperandum praebetur aquae multitudo*).

The recent discovery of a structure interpreted by the excavators as the remains of Roman salt-works seems to confirm the similarity between ancient and modern salt-works. The well-preserved structure, brought to light at Vigo, in Galicia, and dated to the first to second century CE, consists precisely of shallow rectangular basins, separated by lines of stones thrust into the soil and covered by a layer of clay. The basins are arranged on three different levels and their size and depth progressively decrease from one level to the other. Since the smaller basins, contrary to what is expected, are not located on the lower, but on the upper level of the structure, the most plausible assumption is that seawater was moved from one level to the other by way of water-lifting devices.²²

On the basis of the available evidence, two important considerations can be put forward concerning ancient salt-works. First, we can assume that the setting up and running of artificial salt-works required substantial investments in facilities and workforce: one need only consider the excavation and upkeep of basins and channels, the consolidation of earthworks, the management of the water flow with sluices and sometimes water-lifting devices, and, last but not least, the harvesting of salt. The mobilization of these substantial investments was clearly meant to guarantee not just an occasional surplus but a large and regular production, no doubt market-oriented.

Second, given the remarkable similarity between ancient and modern salt-works and the fact that salt production is not based on a complex technology, but on the empirical knowledge of the natural process of solar evaporation, we can assume that the levels of productivity of ancient salt-works may have been not so different from those of their modern equivalents, at least until the twentieth century, when mechanization has considerably facilitated the harvesting and transport of salt.²³ As a result, even if we do not possess data concerning ancient salt-works, we can consider figures taken from modern salt-works to suggest at least some orders of magnitude of what the productive capacity in antiquity may have been.

In the late eighteenth century, the German naturalist Peter Simon Pallas reported that in certain years two natural salt lakes in the district of Pérécop, in the Crimea, the Staroe Osero ('Ancient Lake') and the Krasnoe Osero ('Red

Lake'), produced between them 200,000 to 800,000 *pounds* of salt, that is, ca. 3,276 tons (ca. 2,730 m³) to 13,100 tons (ca. 10,900 m³).²⁴ At the salt-works of Tragasai, in Turkey, the production of salt reached 100,000 *stai* (3,600 m³) in 1817 and ca. 1,558,307 kg (ca. 1,300 m³) in 1894.²⁵ In the 1920s, the inhabitants of the small Cretan island of Kaudos, even without a proper and organized system of production, harvested around 77 q of salt (ca. 6.4 m³).²⁶ By 1849, Thermisi, in the southern Argolid, in the territory of the ancient city of Hermione, was producing 20,000 tons of salt per year (ca. 16,000 m³).²⁷ These figures suggest that we should not underestimate the productive potential of ancient salt-works – and of solar evaporation of seawater in general. If we compare them with the estimated consumption of salt in Table 15.1, one gets the impression that, even allowing for significant differences in production, the majority of small and medium Greek communities were probably able to rely on local sources – both through individual harvesting and artificial salt-works – to supply the local market and fulfill the needs of the population.

This impression gains some support from the rarity of references to inter-regional salt trade in ancient literary and documentary sources and by the remarkable lack of references to any problem related with the supply of salt in the ancient Greek world. To my knowledge, the only explicit mention of a salt shortage concerns the siege of Athens by Demetrius Poliorcetes in 295, during which the Athenians were denied access to their territory and could not receive provisions by sea. Plutarch relates that on this occasion an acute famine hit the city and the dearth of food and other commodities pushed the price of a *medimnos* of salt up to 40 drachmas and that of a *medimnos* of wheat up to 300 drachmas (*Dem.* 33.5–6). Aside from occasional states of emergency, however, it is probable that the relatively limited quantities of salt involved in dietary consumption and the general availability of local resources prevented the salt supply from becoming a critical issue for the survival of a Greek city.

Despite the cultural and symbolic significance of salt and its irreplaceable role in the ancient diet, ancient sources clearly attest the low economic value of salt, thus reinforcing the idea that this commodity was usually abundant or easily accessible in the ancient Mediterranean. In the *Odyssey* – the same poem in which the use of salt appears as a distinguishing trait of Greek society – Odysseus, disguised as a beggar, accuses Antinous of being so uncharitable that he would not even give a grain of salt to a suppliant (*Od.* 17.455). In the description of the Niggard's character Theophrastus (10.13) stresses that he would forbid his wife 'to lend out salt, or a lamp-wick, or cumin, or oregano, or barley groats, or garlands, or sacrificial cakes, maintaining that these small items add up to a lot over the course of a year' (trans. Rusten). In a gloss by Pollux – which I will take up again later – the term *halonetoï*, 'bought with salt,' refers to those slaves who were considered inexpensive because merchants used to purchase them by carrying salt into the hinterland and exchanging the

salt with Thracians for slaves (7.14). Moreover, some scanty references to actual prices seem to indicate that salt was usually sold at a low price, especially in comparison to grain. In Plutarch's account of the siege of Athens in 295, for example, the price of salt was still seven times less than the price of wheat even in a period of acute shortage (40 drachmas vs. 300 drachmas).²⁸

Salt is a relatively heavy and bulky commodity: if its unit value was quite low, the costs of transport were probably high. In this case, even though natural resources or more efficient methods of production caused some areas to be more productive than others, the costs of long-distance transport would have considerably reduced the profits of lower production costs. This could explain why Greek cities found it more convenient to rely as much as possible on local resources instead of turning to foreign trade, hence the rarity of references to interregional salt trade in the ancient sources.

If this was the prevailing pattern for most cities of medium and small size, it is likely, by contrast, that populous centers of consumption were not able to rely exclusively on local resources. Attica, for example, had an abundant supply of salt.²⁹ Some passages from Aristophanes' *Acharnians* seem however to imply that, at least in the fifth century, Athens imported salt from Megara.³⁰ Given the unusual level of Attic demand for salt in comparison with other cities, it is very likely that Athens had to import salt to meet its needs. On the other hand, it is significant that the only passages about Athenian imports of salt identify a neighboring city as the source. This would confirm the inference that nearby production sites were the preferred source of supply.

The remaining few references in the ancient sources to the salt trade mostly concern people living far from the sea. According to Dio Chrysostom, writing in the first century CE, there was a vast number of salt-works at Borysthene (i.e., Pontic Olbia) from which most barbarians, as well as Greeks and Scythians living in the Tauric Chersonnese, bought their salt (36.3). Because the same salt-works were already well known for their large output by the time of Herodotus (4.53.3), we can assume that the same dynamics could have been going on well before the first century CE.³¹

Strabo describes how the people inhabiting the most inaccessible parts of the Caucasus used to assemble at Dioscurias, in Colchis, on the east coast of the Black Sea, in order to buy salt (II.5.6). In this case it is probable that the salt was not produced at Dioscurias, but transported there from other production sites around the Black Sea. In fact, Procopius, in the sixth century CE, observed that the Lazi of Colchis were always engaged in maritime trade with the Romans living on the Black Sea, in order to secure the supplies they needed – mainly salt and grain – in exchange for skins, hides, and slaves (*Pers.* 2.15.5).³²

As stated in the gloss of Pollux mentioned previously, a similar dynamic characterized the activity of the *emporoi* who transported salt into the Thracian *mesogaia* and purchased slaves from the local population.³³ From Herodotus'

detailed description of the march of Xerxes' army in Thrace (7.108–16, 121), it is possible to identify the *mesogaia* mentioned in the gloss with the upper valley of the river Hebros. From the same area, namely from the Greek *emporion* of Vodenica (mid-fifth through early-third century BCE), comes a well-known Greek inscription dated to the mid-fourth century (*SEG* 43:486).³⁴ In the inscription a Thracian king grants guarantees and privileges to the *emporitai* who operated in the *emporion* of the area, in particular to the ones coming from Pistiros, Maroneia, Apollonia, and Thasos. If we leave aside the ongoing scholarly debate on the exact location of Pistiros and Apollonia, the inscription reveals the existence of a consolidated trade network between the Thracian hinterland and Greek settlements in the northern Aegean (Maroneia, Thasos, Pistiros?) as well as, possibly, on the western coast of the Black Sea (Apollonia?).³⁵ Interestingly, for both areas there is evidence pointing to the production of salt, so that the exchange of salt for slaves to which the gloss of Pollux alludes can be placed within the consolidated network revealed by the inscription.³⁶

Another element can be added to the picture, namely an Athenian naval catalogue, dated to the late fifth century, which lists a certain Πιστυρᾶς among the slaves serving as sailors (*IG* I³ 1032, line 136). As is common in slave onomastics, the name probably derives from the real or alleged origin of the slave (i.e., Pistiros). Regardless of its actual identification with one of the *emporion* in the upper valley of the Hebros or with a city on the northern coast of the Aegean facing Thasos, it is clear from the inscription that Pistiros played a major role in the trade network between the Thracian *mesogaia* and the Greek *emporoi* coming from the coast. This means that our Πιστυρᾶς might be an example of a *halonetos*, a slave bought in exchange for salt and brought to in Athens from the marketplace of Pistiros.³⁷

The existence of established trade routes for salt linking the coast and the hinterland fits well into our analysis of the demand for salt in the Greek world. For most of the Greek cities around the Mediterranean, salt was a commonly available and low-price commodity, so that it was more convenient to procure it from local or nearby sources of supply. By contrast, for people living far from the sea, salt was much less easy to acquire and consequently had a higher economic value. The use of the term *halonetoi* to indicate slaves of little value shows that most Greeks considered salt an inexpensive commodity. For the inhabitants of inland Thrace the perspective must be reversed: for them salt was so valuable that it had to be bought in exchange for human beings.³⁸ The difference in value between the point of departure and the point of arrival made it possible for *emporoi* to make substantial profits even after deducting the costs of transport. The constant demand for salt also created the need for regular trade between the coast and the interior.

A higher economic value certainly played a major role in the wide circulation of some specific varieties of salt. According to literary sources, some varieties of salt, such as the ammoniac salt from North Africa, Cappadocian salt, or Iberian salt, were particularly renowned, because of either their taste or their use in medicine and pharmacology. The reputation that these salts enjoyed in antiquity suggests that they circulated well beyond their respective areas of production and were rather widespread across the Mediterranean.³⁹ Without doubt, their specific qualities and uses made these varieties of fine salts so valuable that, unlike the case with common salt, long-distance trade was actually profitable, not least because smaller quantities were involved than what was necessary for the ordinary consumption of salt.

The picture that I have so far described assumes that the majority of small and medium Greek cities were able to rely on the local market to fulfill the internal demand created by dietary consumption and domestic uses of salt. However, the situation was certainly different in those centers in which productive activities involving the use of salt were practiced on a large scale.

As noted previously, the only activity for which we can try to estimate the size of the demand for salt is fish processing. Here we can use the evidence provided by ancient and modern recipes for fish sauces and combine it with the capacity of some of the salting vats discovered at several sites around the Mediterranean. It is important to stress that many different types of fish sauces and salted fish were consumed in antiquity and that different products certainly required different preparations as well as the use of different quantities of salt.⁴⁰ However, because we do not possess data concerning the salting of slices of fish, my estimates will perforce be based on the only available data concerning fish sauces. According to a recipe in the *Geoponica* (20.46.3), *garum* in the style of the Bithynians required two *sextarii Italici* of salt (ca. 1.09 liters) for each *modius* of fish, with a salt to fish ratio equivalent to around 1:8 and the mixture fermenting in the sun for two to three months. However, the production of other fish sauces similar to *garum*, such as the *nuoc-man* of Indochina or the *gharos* of Constantinople, are based on a salt to fish ratio closer to 1:2 or, more frequently, 1:4.⁴¹ As for salting vats, it is equally important to emphasize that the remains that have come to light at several sites around the Mediterranean represent only a small percentage of the production facilities that must have been functioning in antiquity and that the excavated and published vats might represent only limited sections of larger production sites. In particular, the data presented here (Table 15.2) refer all to sites dated to the Roman Imperial Age, between the first century BCE and the third century CE.⁴²

With these caveats in mind, these data offer some rough estimates to compare with the previous approximations concerning dietary and domestic consumption of salt (Table 15.1). The comparison suggests that the demand for salt from a large salting center was quite substantial, and, on its own, it might

TABLE 15.2. *Ancient Salting Vats*

	Capacity of excavated salting vats	Estimated demand for salt for a 3-month cycle of production
Lixus (Morocco)	1,013 m ³	up to 506 m ³ , ca. 9,700 <i>medimnoi</i>
Sexi (Spain)	500 m ³	up to 350 m ³ , ca. 6,700 <i>medimnoi</i>
Baelo Claudia (Spain)	269 m ³	up to 130 m ³ , ca. 2,500 <i>medimnoi</i>
Neapolis (Tunisia)	183 m ³	up to 90 m ³ , ca. 1,700 <i>medimnoi</i>
Sabratha (Libya)	100 m ³	up to 50 m ³ , ca. 960 <i>medimnoi</i>
Tyritake (Crimea)	457 m ³	up to 220 m ³ , ca. 4,200 <i>medimnoi</i>
Chersonnesus (Crimea)	2,000 m ³	up to 1,000 m ³ , ca. 19,200 <i>medimnoi</i>
Portopalo (Sicily) ^a	248 m ³	up to 250 m ³ , ca. 4,800 <i>medimnoi</i>

^a The processing installations from Portopalo can be dated back to the fifth century BCE, with several alterations following one another until the third century CE. Some of the vats are of circular shape (cf. Botte 2009: 86–8, 99).

equal or exceed the demand for dietary and domestic salt of a small or medium community.

At present, there is a clear consensus that fish and salted fish were an important component of the ancient diet.⁴³ At the same time there is little doubt that in the ancient Mediterranean fishing was practiced on many different levels: from the small fisherman who engaged in fishing as a supplement to farming and was occasionally able to sell some surplus on the market for additional income to the ‘professional’ fisherman who practiced it as a full-time occupation with investments in equipment and labor and a clear orientation toward the market.⁴⁴ However, fish resources are not equally distributed in the Mediterranean. It is therefore not surprising that the major processing centers attested in antiquity were located at key points along the coastal routes of migratory species, where the seasonal transit of large schools of tuna or mackerel made large-scale fishing attractive and profitable.

The archaeological evidence, consisting of the remains of production facilities and amphoras used to preserve and transport salted fish and fish sauces, suggests that between the first century BCE and the third century CE there was a huge increase in the number of processing centers, especially in north-western Africa, southwestern Iberia, and in the Crimean peninsula. This dramatic development of the fish-processing industry and the consequent increase in the level of trade are usually linked to the massive demand for salted-fish products generated by the Italian market and, above all, by the presence of Roman legions in the peripheral areas of the empire.⁴⁵

This must not obscure the fact that literary and documentary sources attest the wide circulation and long-distance trade of fish sauces and salted fish coming from the Black Sea and the Gaditan area as early as the fifth century BCE.⁴⁶

The wide circulation of the Gaditan products is further demonstrated by the large diffusion, especially on the Greek mainland and in the western section of the Mediterranean, of Punic amphoras used to transport fish sauces and salted fish produced at Cadiz. The area around Gades also contains the remains of salting vats dated from the fifth to the second century BCE, the most ancient of such to come to light in the Mediterranean to the present day.⁴⁷

Moreover, the absence of archaeological remains of salting vats in a certain area does not mean that fish processing did not take place there. For example, the abundant literary evidence for processed fish from the Black Sea region leaves no doubt that processing activities aimed at the export market already took place in the Classical age. The most plausible assumption is that before the introduction of the archaeologically attested vats of the Roman period, different production methods were used, methods that left very few archaeological traces, such as pottery containers or wooden tubs.⁴⁸ In the same way, the absence of, or the difficulty of identifying, specific types of amphoras linked to the transport of processed fish from the Black Sea does not mean that the amount of exports coming from this area should be underestimated. Once more, the most plausible hypothesis is that salted fish and fish sauces were transported in other types of containers, such as different forms of pottery or perishable containers, namely baskets or wooden barrels.⁴⁹

In any case, what needs to be emphasized here is that the marketing and widespread distribution of processed fish required an adequate level of investment and organization well beyond the capacities of a household economy, and a steady supply of both fish and salt that would support this type of enterprise.⁵⁰ Thanks to the availability of fish, some areas, such as the Black Sea region and the area around Gades, must have been able to specialize quite early in processed fish intended for the export market.⁵¹ Without doubt, in the Roman period the expansion of the demand for processed fish, in the form of both high-quality brands for refined customers and less costly products for large consumer markets, led to the introduction of new or more efficient methods of production, such as the types of vats attested from the first century CE onward. However, the specialization of certain areas in fish-salting activities and the development of a fish-processing industry were strictly linked to the availability of salt. Only salt was able to transform fish – which is otherwise extremely perishable – into a durable commodity, easy to store and trade, with a high economic value.⁵² In other words, where fishing was abundant, salt was necessary to convert fish into a major economic asset.

According to these estimates, medium and large processing centers had to rely on a substantial amount of salt in order to sustain an industry aimed at international trade. In fact, for several processing centers – such as Chersonnesus or Gades, for example – one should note that they were located in areas provided

with abundant salt resources.⁵³ Even if the absence of adequate archaeological remains and documentary sources prevent us from determining precisely the structure of ownership, production, and division of labor, it is quite plausible to assume that in these cases the local production of salt was further enhanced through investments in facilities and workforce. There are some cases, however, in which local resources could not have been able to support a substantial level of production. It is in these cases, in my opinion, that the interregional trade in salt played an important role.

A recent study of the production of salt along the south coast of the Roman province of Baetica describes a significant example of precisely this kind of dynamics. By overlaying a map of the major fish processing centers of the Roman period with a map of salt-works known since at least the Middle Ages, it was possible to observe that some of these major processing centers, such as Baelo Claudia and Malaca, did not have enough salt resources within their territory to supply their own needs for salt. Because the south coast of the Iberian Peninsula has a large number of sites suitable for the production of salt, the most plausible hypothesis is that these centers imported salt from other sites with a higher productive potential. In particular, the salt supply of many processing installations developed along the Malacitan coastline in the first century CE seems to have depended on a steady and sustained maritime trade with the Atlantic coast of Baetica, while the salting centers of Baelo Claudia and Mellaria may have relied on the resources of the nearby city of Baesippo.⁵⁴

This may also have been true for Byzantium in the Classical and Hellenistic periods. Thanks to its position at the Bosphorus Strait, the city profited from the migratory streams of tuna from the Black Sea. However, despite its reputation in the ancient sources as an 'international' fishing and salting center, the city did not possess sufficient supplies of salt to meet its needs. Several pieces of evidence show that in the seventeenth and eighteenth centuries CE, and even before, Byzantium imported salt from the more productive sites of the Dnieper-Bug estuary and from the Crimean peninsula.⁵⁵ For this reason it is fair to assume that the same dynamics occurred also in antiquity, and that the local processing activities were supplied with salt coming from other sites along the shore of the Black Sea.

As these examples show, in those cases in which salt was a strategic resource, its economic value was certainly higher. As a result, the recourse to supplies from outside the region was economically rational despite the high transportation costs. Once more, the existence of a constant demand and the difference in value between the point of departure and the point of arrival of the commodity were crucial for establishing a regular and profitable trading relationship despite the distance involved.

It is worth emphasizing that the widespread consumption of imported fish sauces and salted fish was certainly able to meet the consumers' general need for salt to some extent and that this consumption would have otherwise impacted local resources. In this respect, the trade in salted fish can be considered an indirect form of salt trade because part of the demand for salt required for dietary needs was more conveniently met by long-distance trade of salted fish rather than salt itself. As previously noted, processed fish was a commodity with a higher unit value than salt and, as such, easier and more profitable to transport. So, it was also through the medium of salted fish and fish sauces that the surplus of salt production available in certain regions was redistributed across the Mediterranean and came to play an important, although indirect role, in interregional and long-distance trade.⁵⁶

In the conversation mentioned at the beginning of this study, one of Plutarch's tablemates observes that 'ships carrying salt breed an infinite number of rats' because the females conceive just by licking the salt. In all its vagueness, this incidental reference to 'ships carrying salt' (ἄλγὰ πλοῖα) takes for granted that the sea trade of salt was not an exceptional phenomenon in the Mediterranean.

I hope to have shown here that many different trade patterns probably overlapped and intersected in the Mediterranean, as far as salt – and salted fish – were concerned. In addition to household production and salt-works producing for the local market, the dietary needs of large consumer centers, both in the hinterland and on the coast, and the demands of large-scale processing centers – working in their turn to supply large consumer centers – stimulated a steady and intense interregional and long-distance trade of salt and salted fish, while, at the same time, some qualities of fine salts and fish sauces were also exchanged, maybe in comparatively small quantities but of high economic value, in the Mediterranean market.

NOTES

- 1 Cf. Adshead 1992: 7; Moinier 1997: 23–4, 111–15.
- 2 Cf. Foxhall and Forbes 1982; Gallo 2001: 463–4.
- 3 For the consumption of salt as a distinguishing trait of the civilized world versus barbarian people, see also [Arist.] *Mir.* 138; Sall. *Ing.* 89.7–8; Varro *Rust.* 1.7.8; Tac. *Ann.* 13.57; App. *Hisp.* 54.227; Syn. *Ep.* 148.
- 4 Cato *Agr.* 67: *Pulmentarium familiae. Oleae caducae quam plurimum condito. Postea oleas tempestivas, unde minimum olei fieri poterit, eas condito, parcito, uti quam diutissime durent. Ubi oleae comesae erunt, hallecem et acetum dato. Oleum dato in menses uni cuique S.I. Salis uni cuique in anno modium satis est.* 'Relish for the hands: Store all the windfall olives you can, and later the mature olives which will yield very little oil. Issue them sparingly and make them last as long as possible. When they are used up, issue fish-pickle and vinegar, and a pint of oil a month per person. A *modius* of salt a year per person is sufficient' (trans. Hopper).

- 5 The same remark had already been made by Braudel 1979: 178, a propos salt consumption in the Early Modern Period being twice as much as contemporary consumption. For assessing the equivalence between weight and capacity of a given amount of salt see the recommendation of Colas 1985: 20–1.
- 6 For this reason I cannot follow Giovannini 1985: 375–7 and Mangas and Hernando 1990–91: 222–3, who both choose to use a current annual estimate of 2.5 kg per capita per annum in order to assess salt consumption respectively in central and southern Italy in the Republican era and a pre-Roman community in the Iberian peninsula.
- 7 For the estimated population sizes, see Hansen 1988b: esp. 12, and Hansen 2006b: 93–6.
- 8 Cf. Hansen 2006b: 24–34.
- 9 Cf. Chandezon 2003: 402–4; Bresson 2007: 141–3.
- 10 For animal consumption, cf. Kaufman 1978: 459–60.
- 11 For a brief outline of the use of salt in other productive activities, cf. Carusi 2008: 28–30.
- 12 Cf. Horden and Purcell 2000: 186–90.
- 13 On marshy landscapes in antiquity, cf. Traina 1988; Fantasia 1999.
- 14 For other examples, cf. Sall. *Iug.* 89.8–7; [Arist.] *Mir.* 138; Arr. *Anan.* 1.29.1; Lycoph. *Alex.* 133–5.
- 15 Cf. Carusi 2008: 45–148.
- 16 Plin. *HN* 31.73–83: ‘All salt is either native or artificial; both kinds being formed in various ways, but produced from one of these two causes, the condensation or the desiccation, of a liquid Sea-water, again, spontaneously produces another kind of salt, from the foam which it leaves on shore at high-watermark, or adhering to rocks; this being, in all cases, condensed by the action of the sun, and that salt being the most pungent of the two which is found upon the rocks Of artificial salt there are several kinds; the common salt, and the most abundant, being made from seawater drained into salt-pans, and accompanied with streams of fresh water; but it is rain more particularly, and, above all things, the sun, that aids in its formation; indeed without this last it would never dry’ (trans. by Jones).
- 17 It is widely accepted that this section of Pliny’s *Natural History* is based on Theophrastus’ lost treatise *On salts, niter, and alum* quoted by Diogenes Laertius (*Vit. Phil.* 5.42). Cf. the commentaries of Serbat 1972 and Garofalo in Conte 1986.
- 18 Cf. Cato *Agr.* 24, 88, 105; Col., *Rust.* 7.8.9, 8.6, 12.25; Plin. *HN* 18.68.
- 19 Cf. Davaras 1980: 2–4.
- 20 On charcoal burners, see Olson 1991; Bresson 2007: 81–2.
- 21 The sea salt’s production process is hinted at also in Nicander of Colophon’s *Alexipharmaca* (518–20): ‘Or else you should often administer to the patient crystallized salt (ἔλα πηκτόν) in plenty or salt foam (ἄλδς ἄχνην) which a salt worker (ἄνηρ ἄλοπηγός) ever gathers as it settles at the bottom when he mingles water with water.’ In addition to the only occurrence of the term that indicates a salt worker in ancient Greek, the passage seems to allude to the harvesting of salt in salt-works and to the feeding of salt-ponds.
- 22 See Castro Carrera 2006. The installation of Vigo is the only well-preserved and extensively excavated case of ancient salt-works, clearly recognizable as such. Other possible remains of ancient salt-works are discussed in Ménanteau and Villalobos 2006: 93–7; Carusi 2008: 46–7; Marzano 2013: 126–9. A completely unparalleled structure brought to light in Caunus (Turkey) in 2005 has also been interpreted as ancient salt-works by its excavators (Atik 2008). The preliminary publication records a total of 48 circular salt pans located in a rectangular area and divided into three full parcels of 12 pans each at the center and two half parcels of 6 pans each at the short ends of the rectangle. Each parcel is separated from the other by long rectangular canals (see also Marzano 2013: 126–8). Since Caunus was in all probability an important center of salt production in antiquity (Carusi 2008: 85, 237–9) and the excavated site is ideally placed for the production of sea salt, the interpretation proposed by the excavators seems plausible. On the other hand, however, the structure has no parallel with other ancient or modern known salt-works, and the lack of any connection between

the individual pans and between the pans and the canals leave completely open the question of how the salt production process worked. In my opinion, until new data are published, the interpretation as ancient salt-works should be considered tentative.

- 23 Cf. Hocquet 2001: 41–86, 161–75. Evidence that ancient authors were aware of the different degrees of concentration reached by sea water during the evaporation process and the necessity of leaching can be found at Arist. *Mete.* 2.3.359a; Cato *Agr.* 88, 106; Plin. *HN* 31.81, 85, 92 (see Carusi 2008: 36–7).
- 24 Cf. Baladié 1994: 155.
- 25 Cf. Cook 1973: 222–4. It is worthwhile to observe that Tragasai's salt-works were already functioning and well known in antiquity: cf. Hellanicus *FGrHist* 4 F 34; Phylarchus *FGrHist* 81 F 65; Strabo 13.1.48; Plin. *HN* 31.85–6; Gal. 12.372 Kühn; Carusi 2008: 79–81.
- 26 Cf. Guarducci 1930: 477–9. The production of salt on Kaudos is already attested in the third through second century BCE: cf. *IC* IV 184, fr. A, lines 11–18; Carusi 2008: 91–3.
- 27 Cf. Jameson, Runnels, and van Andel 1994: 311.
- 28 Other data concerning the price of salt in comparison with the price of grain come from Roman Egypt. At Tebtynis in 45–47 CE the price of three different qualities of salt went from 2 dr. and 1 ob. per artaba to 4 dr. and 1 ob. per artaba (P.Mich. V 245.21–2) against 8 dr. per artaba for grain (P.Mich. II 127.I.8, 12–16, 17, 31–8). At Theadelphia in 258/9 CE the price of salt was 10 dr. per artaba (P.Lond. III 1170v.III.124), while the price of grain was 12 dr. per artaba (P.Flor. III 321.I.9). In a grain-producing country such as Egypt it is not surprising that the gap between the price of salt and the price of grain was reduced. Cf. Carusi 2008: 162–5.
- 29 Cf. Xen. *Hell.* 2.4.30–4; *Agora* XIX L4a, lines 16–19; L4b, lines 36–8; *SEG* 33.147, lines 23–4; Cic. *Fam.* 9.15.2; Plin. *HN* 31.87; Steph. Byz. s.v. Ἀλαὶ Ἀραφηνίδης καὶ Ἀλαὶ Αἰζωνίδης. All the evidence is collected and discussed in Carusi 2008: 49–56.
- 30 Ar. *Ach.* 520–2: 'Not a cucumber, a leveret, a suckling pig, a clove of garlic, a lump of salt was seen without its being said, "Hallo! These come from Megara" and their being instantly confiscated'; 760–4: Dicaeopolis: 'It is salt that you are bringing?' Megarian: 'Are you not holding back the salt?' Dicaeopolis: "Tis garlic then?" M: 'What! Garlic! Do you not at every raid grub up the ground with your pikes to pull out every single head?' Dicaeopolis: 'What do you bring then? M: Little sows, like those they immolate at the Mysteries.' Cf. Gallo 2001: 461–2; Carusi 2008: 178.
- 31 According to the French consul de Peyssonnel in the eighteenth century, the same salt-works were still the main source of salt supply for the Cossacks living in the hinterland (cf. Baladié 1994: 159).
- 32 Here again, the dynamics seems characterized by a remarkable persistency: in 1672 the French Protestant exile Pierre Chardin, while sailing to Mingrelia, the ancient Colchis, relates that his boat stopped off at the salt-works of Caffa, in Crimea, to load a significant salt cargo to transport to destination (Baladié 1994: 151–2).
- 33 Poll. 7.14: 'Bought with salt; the same as "barbarian"; hence the expression "halonetos slave", referring to those of no value, in so far as the merchants, carrying salt to the hinterland, obtained slaves in exchange; halonetos, synonymous with "barbarian", as the Thracians sold slaves in exchange of salt.'
- 34 A more recent edition, with an updated *status quaestionis*, in Chankowski and Domaradzka 1999.
- 35 For the identification of Pistiros with Vodenica and of Apollonia with Apollonia Pontica, see Salviat 1999: 260–71; for Pistiros and Apollonia as cities on the Aegean coast of Thrace, see Bravo and Chankowski 1999: 279–90, 315–16.
- 36 For the production of salt on the Aegean coast of Thrace and on the western coast of Pontus, see Carusi 2008: 67–9 and 72–3, respectively.
- 37 Cf. Carusi 2008: 169–72. On slave names as evidence for the origin of slaves see Lewis 2011: 93–8.

- 38 In the eyes of ancient authors it was common for people living far from the sea to obtain salt through trade relations: the lack of both alternatives, as in the case of the barbarian population of the Ardiaei, in Illyria, who lived far from the sea and did not mix with other people, was regarded as a marvel, since they were forced to make use of salt formed from an inland salt spring (cf. [Arist.] *Mir.* 138).
- 39 For the circulation of these types of fine salts, see Carusi 2008: 176–8.
- 40 For a survey of the different types of fish sauces and salted fish consumed in the Greco-Roman world, cf. Curtis 1991: 6–15; Botte 2009: 14–24.
- 41 Cf. Grimal and Monod 1952: 32–3, 37.
- 42 Lixus, Sexi, and Baelo Claudia: cf. Étienne and Mayet 2002: 95–6; Neapolis (Nabeul): Slim *et al.* 2007: 39–40; Sabratha: Wilson 2007: 175–7; Tyritake and Chersonnesus: Højte 2005: 142–8, 150–3. Vats of the Roman period all around the Mediterranean have remarkably similar characteristics: they are usually square or rectangular, varying in size, made of cement and tile and sunk into the ground or cut into the rock; the interior is coated with waterproof *cocciopesto*, angles are rounded or convex, and some vats contain a small depression at the bottom to aid in the cleaning process. In most cases all around the vats one can observe fragments of transport amphorae and organic remains from the salting process.
- 43 Cf. Bekker-Nielsen 2002: 32–3; Mylona 2008: 65–6, 88–90; Marzano 2013: 269–80. For a review of both past and more recent scholarship on fishing and fish-eating see Mylona 2008: 5–15.
- 44 Cf. Bekker-Nielsen 2002: 30–2. For the productive potential of Greek waters, see Mylona 2008: 33–66. For ancient fishing gear and organization of fishing, see Marzano 2013: 28–88 (mainly on the Roman world, but with useful insights into the pre-Roman Mediterranean).
- 45 Cf. Curtis 1991: 177–81; Marzano 2013: 89–122. For a more recent survey of the archaeological evidence at Mediterranean level, see Botte 2009: 24–51.
- 46 For Byzantium and the Black Sea area, see Hermipp. fr. 63 K-A *apud* Ath. 1.27e; Cratin. fr. 44 K-A *apud* Ath. 3.119b; Nicostr. fr. 5 K-A *apud* Ath. 3.118e; Antiph. fr. 78 K-A *apud* Ath. 3.118d and fr. 179 K-A *apud* Ath. 7.303f; Diph. fr. 17 K-A *apud* Ath. 4.132e; Men. *Sam.* 97–100; Archestr. fr. 35 Olson-Sens *apud* Ath. 7.302a, fr. 38 Olson-Sens *apud* Ath. 7.303e, fr. 39 Olson-Sens *apud* Ath. 3.117a–b, fr. 40 Olson-Sens *apud* Ath. 7.284e, and fr. 41 Olson-Sens *apud* Ath. 7.314e–f; Sopat. fr. 11 K-A *apud* Ath. 3.119a; Diph. Siph. fr. 9 García Lázaro *apud* Ath. 3.120f; Polyb. 4.38.4; 31.25.5; Euthyd. fr. 1 García Lázaro *apud* Ath. 3.116b; Dorio, fr. 1 García Lázaro *apud* Ath. 3.118b; Hices. fr. 3 García Lázaro *apud* Ath. 3.116e–f; Strabo 7.4.6; Lucian *Tox.* 4; Plut. *Ant.* 29; Gal. 6.747 Kühn; *SEG* 40.625; *PSI* IV 413; cf. also Carusi 2008: 182–3. For the Gaditan area, see Ar. *Ran.* 474–5; Eup. fr. 199 K-A *apud* Steph. Byz. *s.v.* Γάδειρα; Antiph. fr. 78 K-A *apud* Ath. 3.118d; Nicostr. fr. 5 K-A *apud* Ath. 3.118e; [Arist.] *Mir.* 136; Euthyd. fr. 1 García Lázaro *apud* Ath. 3.116a–c; Gal. 6.747 Kühn; cf. also Carusi 2008: 182–6.
- 47 Cf. Kaufman 1978, Williams 1979; De Frutos Reyes and Muñoz Vicente 1996: 135–45; García Vargas 2001: esp. 26–32.
- 48 Cf. Bekker-Nielsen 2002: 33; Højte 2005: 156–7. The archaeological remains of salting vats found in eastern Sicily, dated back to the fifth through fourth century BCE, show, on one hand, that the introduction of salting vats does not necessarily coincide with an ‘industrialization’ process taking place in the Roman age, and, on the other hand, that many other processing centers yet to be researched must have existed all around the Mediterranean before the Roman period (cf. Guzzardi and Basile 1996: 202–3).
- 49 Cf. Lund and Gabrielsen 2005. The use of baskets might be confirmed by a fragment of the Athenian comic poet Cratinus: ‘I will bring Pontic salt fish in baskets’ (fr. 44 K-A *apud* Ath. 3.119b).
- 50 As Bekker-Nielsen 2002: 33, pointed out, the structure of processing installations varies from single vats or small groups of vats dispersed along the coast or within residential areas to large complexes. These differences certainly reflect variations in ownership and

division of labor, with family-owned small installations probably selling their products to large fish-processors and/or professional merchants for marketing and distribution.

- 51 For the abundance of fish cf. Étienne and Mayet 2002: 26–35 (area around Gades); Strabo 7.6.2; Polyb. 4.43–4; Dumont 1976–77: 96–113 (Black Sea).
- 52 Cf. also Horden and Purcell 2000: 190–7.
- 53 For Chersonnesus and the Crimean peninsula, see Carusi 2008: 75–6; for Gades, cf. García Vargas 2001: 20–1; Ménanteau and Villalobos 2006: 93–7.
- 54 Cf. Lagóstena Barrios 2007: 311–9.
- 55 Cf. Baladié 1994: 151, 156, 159; Carusi 2008: 76–9, 178–9.
- 56 Cf. Morère 1994: 248–9; Carusi 2008: 181–2.

CLASSICAL GREEK TRADE IN COMPARATIVE PERSPECTIVE

Geoffrey Kron

This chapter focuses on foreign trade and consumer demand in the ancient Greek world, and their role in the development of a flourishing commercial economy and an “industrious revolution”, to use Jan de Vries’ phrase,¹ of increased craft specialization, trade and manufacture. In particular, it contextualizes Classical Greek trade by examining the phenomenon in comparative perspective. This will allow us to better appreciate the degree of development attained in the economy of the Greek world, as well as living standards and access to imports.

The greatest symbol of Classical Greek commerce was Piraeus, a sizeable city in its own right, covering 300 ha, an area comparable to Rhodes, and significantly more than the 211 ha of Athens itself.² It was the center not only of its own *agoraios ochlos*, but also of the *nautikos ochlos*, which crewed merchant vessels and warships travelling throughout the Black Sea, the Aegean, the Adriatic and beyond, shipping goods and protecting the sea lanes from pirates.³ Blessed with what Xenophon describes as ‘the finest and safest accommodation for shipping, since vessels can anchor here and ride safe at their moorings in spite of bad weather,’ (*Vect.* 3.1; 5.2–4) and three secure deep water harbors, it would share with its Hellenistic rivals (Rhodes, Alexandria, and, in a brief anomaly,⁴ Delos) the reputation as one of the principal ports of the Eastern Mediterranean.⁵ Aelius Aristides’ flattery of Rome’s role as the great clearinghouse of the products of the world (*Roman Oration*) is anticipated in the tributes of Isocrates, Xenophon, and the Old Oligarch, and in Thucydides on

the role of the Piraeus as the principal axis of maritime trade, at least for the Eastern Mediterranean, in the Classical period.⁶

The comic writer Hermippus offers a long list of imports, some significant, others fanciful:

From Cyrene, silphion and ox-hides; from the Hellespont, mackerel and all kinds of salt fish; from Sitalces, itching powder for the Lacedaemonians, and from Perdiccas, many shiploads of lies. Syracuse sends pork and cheese, and may Poseidon sink the curved ships of the Corcyreans since they collaborate with both sides. That is what comes from that direction. From Egypt, sails, rigging and papyrus; from Syria, incense. Crete the Beautiful delivers cypresswood to the gods; and Libya, ivory for sale; Rhodes, raisins and dried figs that bring pleasant dreams. From Euboea, pears and fat sheep; slaves from Phrygia and mercenary troops from Arcadia. Pagasae provides slaves and tattooed men; the Paphlagonians furnish Zeus' acorns and glistening almonds, the highpoint of the meal. Phoenicia, palm fruit and wheat flour of the finest sort; Carthage, carpets and decorated pillows.⁷

As this oft-cited fragment of the comic poet Hermippus, dated ca. 430 BCE, humorously reminds us, and as Erxleben has investigated in some depth,⁸ the *deigma* in Piraeus displayed products from Egypt and the Near East, Ionia, Macedonia, North Africa, Carthage's colonies, and Magna Graecia. Recent archaeological studies, including the discovery of *bucchero* ware in Miletus and Ionia,⁹ and strong Etruscan influences on Archaic and Classical Greek metalwork,¹⁰ remind us that the Etruscans played a role in maritime trade comparable to that of the Phoenicians and Carthaginians,¹¹ not just in the Western Mediterranean, but also perhaps in the Aegean as well.¹² Moreover, although direct evidence is scanty, we should not neglect the likely importance of trade in a wide range of commodities, with the Thracians and the Scythians through the Black Sea,¹³ and, sometimes direct, sometimes through Etruscan intermediaries, with Celtic Central and Western Europe.¹⁴

Although Meyer and Beloch insisted long ago on the comparability of Greek maritime trade to that of the late Medieval Italian, Dutch, and Hanseatic maritime republics, this important source of comparative evidence has rarely been analyzed or exploited to investigate the scale of ancient trade. A few stray scraps of literary and epigraphic evidence show, however, that even at the nadir of Athens' fortunes, after the defeat in the Peloponnesian War, trade into Piraeus was comparable in value (using wheat equivalents) to that of Venice, the wealthiest and most enduring of the Renaissance mercantile and naval powers in the Eastern Mediterranean. We know from Andocides that the *pentekoste* or 2 percent tax on trade into Piraeus in 404/3 BCE yielded 36 talents, implying imports and exports subject to taxation (since some favored traders were granted *ateleia*) of 1,800 talents or 10.8 million drachmas (Andoc.

1.133–4). If we accept Hansen's estimate of the Athenian population, this represents just around 43.5 drachmas per capita.¹⁵ In order to put this into context, as we must, the Venetian 6 percent tax on their own harbor produced 65,000 ducats in 1584 and 118,000 ducats in 1604,¹⁶ implying trade of 3.35 and 6.08 million drachmas respectively, or 27 drachmas and 49 drachmas per capita, if we convert Venetian ducats into drachmas using their purchasing power in wheat equivalents.¹⁷

More importantly, perhaps, this high level of trade activity was true not just for Athens itself, but also for most of the states in its maritime empire, which, even in the very difficult aftermath of the Sicilian defeat, and notwithstanding constant naval warfare in Ionia, Caria, and the Hellespont, enjoyed an extremely vigorous trade. While a few states in the empire may not have been advanced commercial and trading economies, most seem to have been nearly as developed as Athens itself. We can estimate maritime trade among the members of the Delian league if we recall that the Athenians sought to raise their tribute to 1,460–1,500 talents in 425 BCE (*IG I³ 71*, line 181), and assume that they had a reasonable expectation that the 5 percent tax on the harbor trade of the members of the league, which replaced the tribute ca. 413 BCE,¹⁸ would match, or perhaps exceed, this revenue target. This would imply a level of trade of 180 million drachmas, excluding Athens, or 65.6 drachmas per capita, assuming a population of the empire, essentially Ionia, the Cyclades, Thrace, the Hellespont, and Black Sea, of 2.743 million in the late fifth century BCE, based on Hansen's recent estimates of the population of the principal Greek *poleis* in the fourth century BCE.¹⁹

These figures for Athens are almost certainly unrepresentatively low, which is not surprising in a period of economic crisis,²⁰ but they are certainly realistic and credible, both in terms of Venetian trade, and that of the rest of the Delian league, as well as the following estimates. An inscription from Delos gives the revenue from the *pentakoste* as 14,200 dr. in 279 BCE and 17,900 dr. in 280 BCE, corresponding to an overall trade of 895,000 dr. and 1,100,000 dr., respectively.²¹ If we assume a population of around 25,000, we get trade per capita figures of 38.5 and 44 dr., reasonable for a small island in the Cyclades with an active port and sanctuary, but limited role in maritime commerce.

Polybius' evidence about the harbor dues collected by Rhodes, which fell from 1 million dr. to 150,000 dr. in the immediate aftermath of the Roman state's declaration that Delos would be a tax free port,²² are also highly significant. These figures imply 50 million dr. of trade flowing through Rhodes, dropping to 7.5 million, which, if we take Beloch's estimate of the Rhodian population of 100,000,²³ would imply trade of 500 dr. and 75 dr. respectively. We can see, therefore, comparable figures for trade per capita for Athens at its nadir, the Athenian empire, and from Rhodes and Delos when their ports were primarily serving their own domestic trade, giving us good reason for

TABLE 16.1. *Trade Statistics for Great Britain (converted into dr. using wheat equivalents)*

Year	Imports (dr. per capita)	Exports (dr. per capita)	Total trade (dr. per capita)
1805	7.5	6.6	14.1
1815	8.3	11.6	19.9
1820	7.8	9.6	17.4
1825	12.8	11.6	24.4

For imports and exports from Great Britain, see Mitchell and Deane 1962: 287–8 (Overseas Trade 4); and Mitchell and Deane 1962: 295 (Overseas Trade 5), respectively. The relevant population statistics are from Mitchell and Deane 1962: 9–14, and are all converted from pounds sterling to drachmas using wheat prices from Wordie 1982: 286, graph 4.

confidence in their accuracy, as well as suggesting similar levels of integration into broader markets. Our estimate for Rhodes just before the crisis of confidence caused by Rome's threatened reprisals (while based on very uncertain population figures) shows that a large amount of trade activity was constantly floating through the Eastern Mediterranean during the Classical and Hellenistic periods, ready to be attracted to an important trade hub.

Per capita trade in the early nineteenth century United Kingdom, if converted into drachmas according to wheat equivalents,²⁴ was significantly more limited than the Venetian Republic or most Classical or Hellenistic Greek *poleis*, at least those in Athens' sphere of influence, if one takes into account the fact that her colonial empire embraced India, China, the West Indies, North and South America.²⁵ Much of this British trade, often as much as 30–50 percent was immediately re-exported,²⁶ and these figures, while not adjusted for smuggling, may in fact overstate Britain's trade activity compared to our Greek figures. As will be discussed further, domestic demand in England likely remained much lower than in the more urbanized and egalitarian mercantile republics of Italy and Holland until at least the latter half of the nineteenth century, and England's trade dominance could be attributed in large part to the Royal Navy and her stranglehold on much international trade in colonial commodities like sugar, rum, tea, coffee, and tobacco, which constituted 33–58 percent of her imports, as well as Indian and American cotton, which represented a further 6–20 percent.²⁷

One key commodity, which deserves to be highlighted, is grain.²⁸ Athenian wheat imports, estimated by Demosthenes at approximately 800,000 *medimnoi* or 42,105 metric tons in the mid-fourth century BCE,²⁹ or approximately 168 kg per person, were significantly greater on a per capita basis than the imports of 122 kg per person imported into the Netherlands in 1649,³⁰ at a peak of its Baltic grain imports – the figures for 1680, for example, were barely half those of 1649.³¹ Athens' imports of wheat dwarfed those of the United Kingdom, however, on a per capita basis, exceeding them by a figure of 7.5 in 1840, when imports were barely 22 kg per capita and by a staggering factor of

289 in 1835, for example, a year of minimal imports.³² These massive imports of wheat permitted Athenian farmers to concentrate, like their Dutch counterparts in their golden age,³³ on intensive farming of cash crops for urban markets and for export. Archaeological evidence from field surveys and excavations of farmhouses corroborate Thucydides' insistence on Athens' densely settled landscape of small farms with tree crops, vines, and out-buildings for stabling sheep and cattle. Evidence from Heraclea in the Pontic Chersonnese is extremely revealing,³⁴ as it shows that some small peasant plots had farm buildings comparable in size to many Roman *villae rusticae* of the Principate.

Far from producing for their own domestic consumption, Greek peasants relied on the strong urban demand for meat, wine, olive oil, and vegetables from *poleis* throughout the Aegean to diversify and intensify production, introducing convertible husbandry and improved fodder crops; breeding larger, more fertile and finer-wooled domestic animals; and cultivating many fine fruits, nuts, vegetables, and herbs.³⁵ This concentration on the export of cash crops rather than subsistence farming is clear not simply from the massive imports of grain, but also from the robust trade in wine and olive oil, which won markets not only throughout the Greek population of the Mediterranean, but also in Italy, Gaul, Thrace, Southern Russia, Egypt, and the Near East.³⁶ The high reputation and heavy exports of Greek wine and olive oil in the ancient Mediterranean is a dramatic contrast with the marginal role of these same commodities in the trade of Greek merchants in the nineteenth century CE, when they played little more than a minor role in the exports of Patras and Smyrna.³⁷

The evidence for the size of Greek merchant ships corroborates the evidence already presented that ancient maritime trade was as highly developed as in the great trading states of the Renaissance and eighteenth century,³⁸ for, although much of our iconographic, literary, and especially our shipwreck evidence for the rise of massive merchant ships dates from the Roman era, there is good reason to believe that Wallinga and Casson are right to place the critical technological changes in the Classical and Hellenistic era.³⁹ Already in the fifth century BCE, the harbor at Thasos would not even admit ships of less than 78 or 130 tons cargo capacity respectively,⁴⁰ a regulation which Casson rightly takes to prove that this was the minimum size of a sea-going merchant ship,⁴¹ and Vélissaropoulos has plausibly estimated that by the fourth or early third century BCE, the average tonnage of Greek vessels had certainly exceeded 120 tons, with inscriptions alluding to ships of 165 or 320 tons as common.⁴² A chance reference by Thucydides (7.25.6) to the construction of a well-armed version of a class of merchant ship called a *myriophoros*,⁴³ dated ca. 413 BCE, is convincingly interpreted by Wallinga as evidence that large grain carriers capable of carrying 10,000 transport amphorae, or *medimnoi* of grain, and therefore of over 400 tons burden, were already being built in significant numbers in the fifth century BCE in order to ship Athens' massive imports of grain.⁴⁴

Merchant ships in the Classical and Hellenistic period of 350–500 tons were therefore by no means uncommon,⁴⁵ but much larger ships are very well attested, particularly for the grain trade, such as the Roman era grain freighter *Isis*, a ship of at least 1,100 to 1,300 tons, and the ships used to transport obelisks to Rome by Augustus and Caligula.⁴⁶ One of the earliest and most celebrated, however, was the *Syracusia* built for Hieron II of Syracuse,⁴⁷ a massive ship capable of carrying 4,340 metric tons of cargo in addition to its aquarium, mosaic floors, horse stables, and catapult towers,⁴⁸ with a hull plausibly estimated to displace more than 2,000 tons. Built sometime in the mid-third century BCE, it was an especially lavish and extravagantly appointed version of the large freighters developed for the Athenian, Rhodian, and Syracusan grain trades,⁴⁹ and ought to convince us that Greek rather than Roman shipwrights were at the cutting edge of technological innovation. Ultimately, however, these technological achievements are less important in themselves, than as an index of the rapidly increasing levels of maritime trade, which made these innovations not only possible but attractive.

Although our shipwreck evidence is heavily biased toward the Western Mediterranean, particularly Italy and France, and to coastal waters and presumably smaller craft,⁵⁰ there is ample confirmation that a significant percentage of ships were more than 100 tons, and that ships of 200–400 tons or more were relatively common, at least in the period from between 200 BCE and 400 CE which has yielded the most shipwrecks, primarily in the Western Mediterranean.⁵¹ Despite the very modest number of Archaic or Classical shipwrecks fully published to this point, we now have archaeological confirmation for the existence of the large merchant ships so well attested by the literary and epigraphic evidence. A shipwreck dated between 420 and 400 BCE was discovered off the modern island of Alonessos, ancient Ikos, with a large field, 25m by 10m in extent, of Mendeian and Peparethian wine amphoras.⁵² More than a thousand amphorae are exposed on the sea bed and a preliminary excavation of two small trenches suggests that the ship's cargo included more than 4,200 amphoras, weighing at least 126 tons.⁵³ Comparison with the fully excavated Albenga wreck of the first century CE suggests, however, that the Alonessos ship was probably a good deal larger than that. The Albenga ship was also marked by a field of amphoras just modestly smaller, 25 m by 8–10 m,⁵⁴ which has been calculated to have represented 10,000, or around 450 tons. The ship's actual length was revealed to be 40 m rather than 25 m, which is much more consistent with the dimensions of an actual merchant ship,⁵⁵ and yields an estimate of its total cargo capacity of 500–600 tons.⁵⁶

The size of Greek merchant ships is all the more impressive if one places them into the proper historical perspective. While sixteenth-century Venetian merchant galleys could carry from 260 to 280 tons of cargo,⁵⁷ and ships of the Dutch Baltic fleet (which imported most of Holland's bulkiest cargoes of

wheat) had increased in size to an average of over 260 tons by the 1630s, with Dutch East India merchant ships typically reaching as much as 900 tons,⁵⁸ British merchant shipping continued to rely on small ships of considerably less than 120 tons through much of the eighteenth and early nineteenth century.⁵⁹ It is not until the end of the nineteenth century that ships of 1,000 tons or more, often, but not exclusively, iron-hulled steamships, begin to be built in quantity by British shipwrights,⁶⁰ but Casson is mistaken to claim that this was the result of any technical limitation on the size of wooden hulls,⁶¹ as Chinese ships of over 4,000 tons can be documented.⁶² Even the economic significance of the transition from sail to steam can be exaggerated,⁶³ for, although steel hulls with effective anti-fouling paint and steam would eventually cut the length of trans-Atlantic sea voyages from five to six weeks to two,⁶⁴ which was critical for the passenger trade, wooden sailing ships remained competitive for the transport of bulk cargoes into the twentieth century,⁶⁵ with clipper ships only being supplanted in the China tea trade with the re-opening of the Suez canal.⁶⁶

What explains this gap between the relatively modest impact of shipping and trade on the English population, despite her command of the seas and international colonial empire, and the heavy participation of the ancient Greeks, or the Renaissance Venetians or Dutch, for example? Although English urbanization exploded in the mid-nineteenth century,⁶⁷ it had lagged well behind Italy and the Low Countries until that time. Moreover, agrarian capitalism and the proletarianization of the rural labor force meant that most consumer demand was restricted to the gentry, landowners, and small urban middling classes. Even for Northern Italy and Holland, however, urbanization rates seem to have been significantly lower than those suggested for Greece by the survey work of John Bintliff and by Mogens Hansen's 'Shotgun method.'⁶⁸ Very few cities of significant size could be found in England before the nineteenth century, and a massive gap remained between London and the rest, typically ports or important market or university towns.⁶⁹ London's merchants and craftsmen, as Defoe describes in depth,⁷⁰ served the carriage trade, the rural gentry and aristocracy, who flocked into London for the social season, engaging in a flurry of conspicuous consumption,⁷¹ powered by the rents extracted from the landless laborers and tenant farmers who populated England's villages and produced her wheat and wool, but were too poor themselves to contribute much in the way of demand to London's burgeoning commerce,⁷² as is apparent from their low and stagnant real wages.⁷³

A true urban middle class culture – of the sort which developed in many Greek *poleis*, Renaissance Italy, or the Netherlands – could exist, outside of London at least, only in small pockets.⁷⁴ There was therefore little domestic demand outside of the rural gentry and aristocracy and London's bankers, merchants, and middle classes until the 1860s or 1870s. Village England offered

very little scope for imports, although tea, coffee, and sugar became critical sources of quick energy to under-fed laborers, despite the complaints of polite society that such extravagance was ill-suited to their station in life.

I have discussed the distribution of wealth and income at Athens, and in Greco-Roman society generally, in greater depth elsewhere, so I will forgo a detailed account here,⁷⁵ but the foundation of the robust trade of the Greek *poleis* was their high level of urbanization and the existence of a sizeable and prosperous middle class. As Walter Scheidel and Ian Morris have recently pointed out, and as was first demonstrated by Gustave Glotz in the 1920s, Classical Athenian wages, even for unskilled laborers and slaves, were several times subsistence, and could afford a decent standard of living. Of course, many Athenians had some land and capital, running small businesses or farms rather than working for a wage, and skilled workers could earn much higher returns.

However, it is tolerably clear from the evidence for the distribution of wealth at Athens, and from a comparison of Greco-Roman housing and nutrition with that of the working classes of the *ancien régime*, that Greek society was dramatically different and significantly more egalitarian than the profoundly unequal society of nineteenth-century England. Instead, we see a level of housing, and of wealth and income distribution comparable to twentieth-century representative democracies, or societies like Renaissance Florence, a broad-based oligarchical republic, which flirted with a short-lived democratic regime following the Ciompi revolution of 1378.⁷⁶ Greek houses were remarkably large and modern in appearance, with a median ground area of significantly more than 200 m², dramatically larger than the typical cottages or tenements of the working classes of nineteenth-century England, with a median size of 21.8 m², and slightly larger than the median of single detached houses from the U.S. housing survey of 1997. Some Greeks did not rent or own entire houses, of course, but lived in apartment buildings or *synoikiai*. Even these, however, as the few excavated examples show, typically provided apartments with more than 60 m² of living space.

Although it is often claimed that the eighteenth century saw an English consumer revolution,⁷⁷ this was largely restricted to the aristocracy, the great rural landowners, and a few wealthy merchants. Very few gentry or middle class households in England owned china or pictures, for example, as late as 1725,⁷⁸ and inventories of English tenant farmers and minor gentry in Essex, dating from 1633 to 1749, showed that only 13 percent owned silver and only 2 percent owned books, pictures, and maps, whereas, by early 1700, most Dutch rural households also had consumer goods (e.g., in one region 55 percent owned books; 70.5 percent owned clocks, 94 percent owned mirrors, and 63 percent owned silver).⁷⁹ Moreover, as Goldthwaite points out: 'In a letter to Benedetto Varchi, Vasari observed that there was not a house in Florence without a Flemish painting. In Venice, the number of households with 10 pictures

increased four times in the second half of the 16th century, [and] 1,000 households sampled in seventeenth-century Bologna had 10 or more pictures.⁸⁰

While eighteenth and even nineteenth century England offers a very poor model (except by way of contrast) for Classical Greek economy and society, seventeenth century Holland and Renaissance Venice or Florence,⁸¹ despite being decidedly less democratic, do suggest a model for the robust demand for consumer goods that Athens' large and prosperous middle class generated. The spaciousness and luxury of Greek housing opened up a very large demand for home decoration, furnishings, furniture, and house wares. Although best preserved in Pompeii and Herculaneum, and late antique contexts in North Africa and the Near East, Walter-Karydi and Graham have argued that wall-painting and fine pebble and glass mosaics began to decorate private houses already in late fifth century BCE Athens⁸² and gradually became more and more common in ordinary Greek and eventually Roman households, a development which will have generated considerable income and employment for plasterers, painters, and mosaicists.

Greek middle class demand, and ready maritime markets among non-Greek but rapidly Hellenizing peoples throughout the Mediterranean encouraged intense competition and innovation among workshops throughout the Greek world. Modern stylistic analysis has corroborated and supplemented our literary evidence for important regional schools, much as one would expect from the evidence we have already noted of strong trade throughout the Athenian empire. While Athens arguably enjoyed the greatest and most persistent influence, many other regions, most notably Argos, Laconia, Corinth, Arcadia, Aegina, Sicyon, Egypt, Rhodes, Pergamum, Syracuse, Tarentum, and Macedonia were able to build up a pan-Hellenic reputation and win important markets beyond their own region, at some point.⁸³ Nor should we neglect the importance and stylistic influence of imports of non-Greek manufactured goods, particularly Phoenician and Punic imports in the Orientalizing period,⁸⁴ and Etruscan metalwork and *bucchero* through the Archaic and Classical period, but also Achaemenid luxury goods, particularly silverware and textiles.⁸⁵

The wealth which successful artists and craftsmen could achieve is well attested by Stewart's studies of the social status of Classical and Hellenistic sculptors, such as Praxiteles and his son Cephisodotus, trierarchs several times over, and, like quite a few other sculptors, members of Athens' liturgical class.⁸⁶ But humbler arts could also be nearly as lucrative, as Aristotle suggests,⁸⁷ and as the success of several potters shows, such as Andocides and Euphronius, who set up expensive dedications on the acropolis,⁸⁸ or Bacchius, honored by Ephesus with citizenship and an honorary decree.⁸⁹

A recent study of the economic lives of painters in the Italian Renaissance, as well as the Florentine *catasto* tax records, and documents from artisans' guilds, amply demonstrate how much money skilled craftsmen stood to make from

the robust demand for art generated by a prosperous society, with a tolerably broad middle class. Naturally Michelangelo (who left fl. 22,000), Raphael, Bernini, and Ghiberti made large fortunes,⁹⁰ like those generated by Pheidias (Pl. *Meno* 91d) or Lysippus, but humbler craftsmen like the enterprising stonemason Piero d'Andrea could also get rich.⁹¹ A number of artists chose to diversify into retailing the work of others as well, and some, like the Venetian Marco Boschini, a minor talent himself, set himself up as a connoisseur, wrote a book extolling Venetian art, took prospective buyers on gondola tours of the city's great artistic landmarks, and boasted of the money to be made in art by those able to buy well, claiming that Tintoretto's commissioned for 50 ducats were now selling for 50,000.⁹²

The best-documented, but hardly the most important, Greek craft export is one of the cheapest and most fragile: fine pottery. It offers important proxy evidence for the geographical reach of many much more expensive manufactured goods produced by Greek craftsmen.⁹³ Expanding the markets once captured by Corinthian fine pottery, Attic black-figure and red-figure ware, like Etruscan *bucchero*,⁹⁴ was relatively inexpensive yet attractive pottery, ideally crafted for a broad and expanding market of prosperous peasant farmers and middle class urban craftsmen and shopkeepers.

The Attic *stelai* and commercial graffiti clearly prove, as Vickers and Gill have argued in depth, that fine Attic pottery remained very inexpensive and was well within the means of virtually all Greek households and many Italic, Etruscan, and Near Eastern ones.⁹⁵ Although Beazley's superb art-historical scholarship may seem disproportionate to the value of the pottery analyzed, it is helpful in establishing individual workshops and tracing their diffusion, as in the case of the Niobid painter, for example, whose work has been found at Spina,⁹⁶ Bologna,⁹⁷ Capua,⁹⁸ Vulci,⁹⁹ Tarquinia,¹⁰⁰ S. Russia,¹⁰¹ Nola,¹⁰² Camiros,¹⁰³ Kimissala,¹⁰⁴ Athens, Vari,¹⁰⁵ Camarina,¹⁰⁶ and Monte Sannace.¹⁰⁷ While the economic impact of the industry should not be over-estimated, it was likely to have been far from negligible, for Athens at least. The Staffordshire potteries ranked fifth in their share of English manufactured exports to North America in the late eighteenth and nineteenth centuries,¹⁰⁸ behind textiles, hardware, cutlery, and iron and steel, since, as Josiah Wedgewood said 'our home consumption is very trifling in comparison to what is sent abroad.'¹⁰⁹

We can get some impression of the reach of Athenian products by examining the database of findspots of Attic black- and red-figure pottery, which Sir John Beazley's detailed study helps us compile.¹¹⁰ This data is, of course, extremely selective, based almost entirely on complete pots of museum quality, and excluding many fragmentary and poorly executed works. Its scope would increase exponentially were one to attempt to survey even the excavated and published archaeological material, to say nothing of the millions of sherds which were presumably spread with manure and compost all over the

Greek and Italian countryside. Nevertheless, it is clear that Attic imports were ubiquitous in most Greek settlements, in Ionia, naturally,¹¹¹ but even in states at war with Athens, like Corinth.¹¹² They penetrated far beyond the Greek world, however, as deep as Babylon and Susa,¹¹³ and were especially massive in the Levant.¹¹⁴ As an excellent 2005 survey by Stewart and Martin shows, 'by the Achaemenid period, virtually all fine wares were Attic imports' throughout Syria, Phoenicia, and eventually Judaea.¹¹⁵

Perhaps one of the largest, and certainly the most comprehensively studied foreign market for Greek, Carthaginian, and Phoenician manufactures was Italy, recently analyzed in depth by Fletcher.¹¹⁶ The Etruscans, Messapians, Peucetians, Apulians, and Campanians were all prodigious consumers of Attic fine pottery, so much so that a number of workshops seem to have catered to Etruscan consumers.¹¹⁷ Egypt and North Africa were important markets, not just Greek settlements at Naucratis or in Cyrene, but among the Carthaginians, and in Egyptian centers such as Memphis, Luxor, Saqqarah, Elephantine, and Meroe.¹¹⁸ The Greek colony of Ampurias, not surprisingly, has 175 complete pots by known masters studied by Beazley, and 145 from nearby Ullastret, but Attic pottery has also been found in many sites in Baetica and along the Southern coast of Spain and Portugal. Even across the Alps, along the Rhone trade routes, but also in Central Europe, red-figure pots can be found, clear evidence that they were appreciated by the Celts and Germans. Finds are especially dense in Celtic sites in Provence and Languedoc, with 303 pots from Enserune, for example – many times more than at Marseilles, and more even than at Ampurias.

Attic pottery exports are well known only because ceramics are preserved archaeologically. Greece's most skilled craftsmen surely worked not in ceramic, but in textiles, marble, wood, bronze, iron, ivory, bone, and precious metals, and wherever cheap and fragile pottery reached, other, more valuable products were surely traded.¹¹⁹ Of course, shipments of raw and processed agricultural products, raw materials, and commodities – like metals, timber, and stone – will often represent a disproportionately large share of the tonnage transported by traders, ancient or modern, and this was clearly true throughout Greco-Roman antiquity.¹²⁰ Accounts of cargoes imported into Achaemenid Egypt by Greek merchants featured wine and wool, but also iron, bronze, clay, tin, and timber, especially cedar.¹²¹ With their massive production of merchant vessels and warships, Greek states had to import a great deal of timber. Athens relied heavily on Macedonia, as is well known,¹²² but recent analyses of wood preserved in Pompeii and Herculaneum show that a good deal was imported along the Adige and Po Rivers from the Austrian Alps,¹²³ and we should probably imagine a vigorous trade throughout the Mediterranean in common as well as rare timber, like cedar, ebony, and citrus wood, much of it in the hands of Greek merchants. While cargoes of wood are hardly likely to be preserved,

shipwrecks can document the trade in raw glass¹²⁴ and ingots of refined or scrap metal,¹²⁵ as well as stone, particularly the fine Parian, Pentelic, Hymettian, and Proconnesian marbles, which represented one of Greece's most remarkable natural resources.¹²⁶

We will concentrate primarily here on the trade in manufactured items, however. The workmanship and versatility of Greek craftsmen would be more evident had we a larger sample of their marble and bronze statuary, jewelry, and silverware. Greek silver and gold plate, described in great detail in the procession of Ptolemy Philadelphus¹²⁷ or in the treasury accounts of many temples,¹²⁸ almost never survives, and then almost exclusively in barbarian graves, or the occasional fortuitous hoards, such as the Rogozen treasure from Thrace.¹²⁹ Some idea of the importance of raw, coined, and worked silver for Greek trade,¹³⁰ and the amount of plate in circulation in the Classical and Hellenistic world,¹³¹ now almost entirely lost to us, can be gathered when one recalls that Alexander the Great captured as much as 2,200 metric tons of precious metals from the Persian monarch, and the Romans looted 550 tons of silver from their campaigns against the Macedonians and Aetolians, including innumerable gold and silver vessels, despite leaving many of the major sanctuaries largely intact.¹³² When contemplating just how much plate has been melted down over the centuries, it is worth reflecting that the 108 silver and silver-gilt *phia-lai* uncovered in a single hoard from a modern garden in Rogozen was more than twice the total number of such vessels preserved in the world's museums at the time.¹³³ Excavations in Thrace, the North Pontic region, Macedonia, and among the Italic populations of Magna Graecia provide us with a disproportionate amount of evidence for Greek production of art objects in precious metals.¹³⁴

In addition to furniture, vessels, tools, statuary, and the like, we must also factor in fine jewelry, rarely buried in Greek graves, but much more common among Hellenized Southern Italians, in Thrace and the Black sea region, Cyprus, Egypt, the Levant, and increasingly uncovered in recent excavations and northern Greece and Macedonia.¹³⁵ One of the most remarkable testaments to the workmanship of Greek jewelers is the exquisite gold pectoral, normally dated sometime between 400 and 350 BCE, from the Tolstaja Mogila Kurgan in the Ukraine,¹³⁶ but hundreds of more modest items have been excavated,¹³⁷ many showing how closely attuned Greek craftsmen had become to producing artworks for barbarian clients, even reflecting their lifestyles, myths, and adapting traditional subject matter in the finest Greek style.¹³⁸

The existence of an organized trade in silverware can be documented by a few fortuitous finds of commercial graffiti on silver or other vessels, as on an inscribed cup from Dalboki in Thrace, now in the Ashmolean Museum.¹³⁹ Moreover, a large hoard of fifth and fourth century BCE bronze ware from a river shipwreck near Peschanoe in the Dnieper Basin, gives a rare glimpse

into how Greek metal ware was traded into the interior of the Northern Pontic area, with further finds as far as the Tauric sanctuary in the Caucasus mountains.¹⁴⁰

At an intermediate level of cost, between precious metals and simple bronze, one has Corinthian bronze, identified by Craddock as the ancient counterpart to Japanese Shakudo,¹⁴¹ an alloy of bronze and silver or gold, which can be treated to create a glossy black patina which complements gold and silver inlay, as well as superb pieces like the Derveni Crater, from a fourth century BCE Macedonian grave, but likely manufactured in Athens, a masterpiece of toreutic art, in lustrous high-tin bronze convincingly imitating a gold or gilt vessel.¹⁴² Moreover, we should not neglect bronze plated with gold or silver. Analyses of counterfeited Roman coins provide important proof that the ancients had mastered a wide range of techniques for the plating of base metals with silver.¹⁴³

Precious metals and their imitations, although widely traded, were arguably far less important than bronze and iron work. Bronze tableware of a wide range of designs, including mugs, bowls, hydrias, and situlae – many, although by no means all, of Greek manufacture – have been identified throughout the Thracian kingdoms of the Odrysians, as documented in detail by Archibald.¹⁴⁴ An exemplary recent study of Greek imports in barbarian graves excavated along the lower Danube and Dniester clearly documents a no less remarkable interpenetration of Greek commodities and craft products,¹⁴⁵ not only transport amphoras from Lesbos, Chios, Mende, Peparethus, Thasos, Heraclea Pontica, Chersonnese, Sinope, Rhodes, and Cos,¹⁴⁶ but a great deal of ceramics, including Corinthian¹⁴⁷ painted pottery, and Attic black- and red-figure fine wares,¹⁴⁸ black glazed pottery,¹⁴⁹ terracotta lamps, and coarse wares,¹⁵⁰ but also armor and helmets,¹⁵¹ weapons,¹⁵² and innumerable bronze vessels, lamps, and mirrors.¹⁵³ Although less striking, perhaps, than the deep contacts with the Thracians and Scythians, Greek exports to the Celts should not be neglected. The massive bronze crater, weighing more than 208 kg, found in the burial of the wealthy Celtic chieftain at Vix, with Greek wine amphoras and Attic black-figure pottery, gives us a striking impression of the remarkable logistical feats performed to export the products of Greek workshops to distant markets.¹⁵⁴ Moreover, as Rolley aptly points out,¹⁵⁵ Greek bronze work can be found well beyond the natural Rhône corridor, in Germany, and even as far as the Carpathians.

With the increasing use of bronze vessels by ever more prosperous middle class Greeks, the market for fine painted pottery seems to have declined, at least outside of Lucania and Apulia, with potters turning instead to imitations of metalwork for those households still unable to afford the real thing.¹⁵⁶ Black gloss ware was available to imitate a wide range of metal ware, with some of the finer examples painted to resemble Corinthian bronze with gold and/

or silver inlay,¹⁵⁷ and quickly became as widely distributed as Attic red-figure ware,¹⁵⁸ paving the way for the Roman terra sigillata industry.

The furniture manufacturing business of Demosthenes' father, using imported ivory and wood, was large enough to employ twenty slave craftsmen (Dem. 27.9–11), and will hardly have been unique. Unlike eighteenth-century or Victorian England, the Greek design aesthetic was simple, elegant, and appropriate for a broad market. The most expensive furniture was decorated with ivory, silver, or Corinthian bronze accents,¹⁵⁹ or created from prized imported woods, but otherwise did not differ dramatically in design from the furniture of the middle classes.¹⁶⁰ Although businesses like Demosthenes' will have found ready markets for their products outside of Athens from the many merchants thronging the Piraeus, other centers are highlighted by our sources. Aegina became famous for a special alloy of bronze, used not only in sculpture, but also to manufacture the upper parts of bronze candelabra.¹⁶¹ Delos is described by Pliny (*HN* 33.144; 34.9) as an important center for the manufacture of couches, as can now be confirmed by excavations on the island, which have revealed moulds for casting bronze couch fittings of Faust I and II types, found so far in Southwest Asia Minor, Greece, the Kuban basin, and Italy.¹⁶² The maritime trade in furniture is documented not only by stylistic means, but can be demonstrated from shipwreck evidence. Found off the coast of Carthage and tentatively dated to the second or first century BCE, the Mahdia wreck is one of the most spectacular and best studied of Greco-Roman shipwrecks carrying furniture, as well as fine art objects and luxurious home furnishings,¹⁶³ but quite a few such ships have now been excavated.¹⁶⁴ In addition to the cargo of couches already noted, a wide range of products were being carried on the Mahdia ship: ingots of raw metal from the Iberian mines;¹⁶⁵ sixty-seven unfluted marble columns and numerous capitals, representing approximately 230 tons alone; elaborate carved marble craters and candelabra; a wheeled bronze brazier, fine bronze lamps, and a large cast bronze herm, nearly identical to another from the Getty; and small grotesque statuettes which reveal clever techniques for producing large numbers of nearly identical but unique sculptures by re-fashioning the wax models.¹⁶⁶

Such shipwrecks provide important evidence for the extent of the trade in furnishings, housewares, and metal goods,¹⁶⁷ but only hint at the full extent of the potential demand. For this one needs to look at the unique situation of Pompeii and Herculaneum, communities abandoned with many of their possessions intact and then buried.¹⁶⁸ In addition to untold thousands of metal vessels and tools of bronze and iron,¹⁶⁹ there are innumerable small and even life-size statues of bronze and marble, many products of Greek, particularly Athenian,¹⁷⁰ workshops. This industry of producing small decorative statuettes in bronze, marble, or terracotta seems to have really begun to take off in the Hellenistic, rather than the Roman, era¹⁷¹ although thousands of small

votive statuettes dating as far back as the Geometric period have survived from ancient sanctuaries.¹⁷² The massive production of life-size marble and bronze statuary¹⁷³ is suggested by the more than 1,000 Greek sculptors whose names are preserved in the literary record or on statue bases or inscriptions,¹⁷⁴ and from Pliny's despair at classifying it all:

Bronze statuary has flourished infinitely, and would fill a work of many volumes if one wanted to pursue much of it; as for all of it, who could do it? When Marcus Scaurus was magistrate, there were 3,000 statues on the stage of a temporary theatre And it is said by Mucianus ... that there are still 3,000 statues on Rhodes, and no fewer are believed to exist at Athens, Olympia, and Delphi.¹⁷⁵

He goes on to claim that Lysippus was said to have produced more than 1,500 statues in his own workshops.¹⁷⁶ Although many life-size statues or statue groups were likely cast or carved by sculptors who travelled to complete the commission (a trade of services, then, rather than of goods), and skilled craftsmen are often an itinerant sort, in the ancient world as in the Renaissance,¹⁷⁷ a surprisingly large number of bronze or marble statues have been recovered from shipwrecks,¹⁷⁸ and, despite the temptation to attribute them to *spolia* from the sack of Athens or the Macedonian wars, it seems clear that we are in fact dealing with an established trade in finished goods.¹⁷⁹

In addition to the eruption of Vesuvius, we can thank the raids of the Alamanni for a glimpse of the vast production of metal vessels and tools available to loot from Gallo-Roman farms and villas of the third century CE.¹⁸⁰ Unlike the Hildesheim hoard, for example, the farms looted were stocked with utilitarian bronze vessels and a few pieces of simple silverware of relatively low silver content, some deliberately cut up for division among the looters, unconcerned about its value. Most of the victims were likely small- or medium-scale owner-occupiers rather than owners of palatial villas. Significantly, but not surprisingly, the German raiders did not even bother to steal any of the terra sigillata, or even glassware, if any, just as we find a great deal of Attic red-figure pottery unlooted at Olynthus.

Perhaps the most striking feature of the loot is the wealth of iron tools. Such tools are rarely alluded to by our sources, but they certainly will have represented a lucrative craft industry and an important contributor to agricultural productivity.¹⁸¹ Ironworkers will have also made considerable profits from arms manufacture – another important feature of the metal trade that is often overlooked,¹⁸² and can be documented, to note just one striking example, by finds or representations of Hellenistic Boeotian helmets from Italy, Greece, Ionia, Lycia, the Levant, Egypt, Mesopotamia, and Bactria.¹⁸³

In closing, I would like to add a few more observations on the question of self-sufficiency. Classicists still give undue credence to claims about the poor

integration with the market or low productivity of peasant farming or craft production in small, often domestic, workshops. I have already written elsewhere about peasant farmers,¹⁸⁴ so I will concentrate on crafts here. A great deal, often the majority, of production for the market has always taken place in homes, as studies of the Early Modern putting-out system, and of the nineteenth and early twentieth century sweating system of textile production in London and many other English cities, makes entirely clear.¹⁸⁵ But Booth's 1890s survey of London labor shows that textiles were only one of many crafts manufactured in private homes.¹⁸⁶ So, just as Renaissance Florence's many stone-cutters worked out of studios in their homes,¹⁸⁷ so we find workshops in several Olynthian houses. The stone-mason in one house (A5) made stelai, altars, and *louteria*, of the sort often found in ancient shipwrecks,¹⁸⁸ the owner of A10 carved architectural elements.¹⁸⁹

Studies of rural cloth production in nineteenth century Eastern Canada show that those rural housewives who did fashion their own clothes would normally carry out only one or two stages in the production process, typically sold some of their production on the market, and relied heavily on purchased materials already processed in other homes or in textile factories.¹⁹⁰ Moreover, in the Early Modern putting-out system, most textile and craft production was entrusted to the cheap, largely female labor of under-employed rural laborers or peasants, but Erdkamp's claim that the same was true in Greco-Roman antiquity,¹⁹¹ while certainly possible, need not represent the dominant method of textile production. In Renaissance Florence, for example, wool and silk production remained urban crafts, in part because the intensive cultivation of the Florentine *contado* minimized rural under-employment.¹⁹² The actual firms remained small,¹⁹³ however, with most of their capital tied up in raw materials,¹⁹⁴ and, aside from a few fulling mills,¹⁹⁵ little investment in fixed plant or equipment,¹⁹⁶ and relatively little vertical integration of the different crafts that made up the industry in the hands of a few wealthy merchant capitalists.¹⁹⁷ In such a situation, archaeological evidence for ancient textile production will necessarily be tenuous, but 247 loom weights, sufficient for six to twelve looms, were found in one room of House A viii 7 in Olynthus, along with fifty elsewhere, while the communicating house A viii 9 has 133 loom weights, enough for at least three more looms.¹⁹⁸ This business would be comparable to one of the largest Florentine silk weaving shops, and larger than almost all wool weaving establishments.¹⁹⁹

As we have seen, the taxes levied on maritime trade in the harbors of Athens, Delos, Rhodes, and the member states of Athens' Delian league, and the remarkable growth in the size and cargo capacity of merchant ships, make it clear that trade played at least as important a role in the economies of many Classical Greek city states as in the great maritime republics of Northern Italy and the Low Countries during the Renaissance, and a much greater role than

in England, at least on a per capita basis, at the beginning of the nineteenth century. No less significantly, recent archaeological research allows us to flesh out the nature of this trade, amply demonstrating a vigorous trade in commodities such as timber, metals, and building stone, in addition to a wide range of Greek manufactured goods, including painted or glazed fine ware pottery, stone and terracotta statuary, jewelry, gold and silver plate, metalwork, furniture, and housewares, all imported and exported throughout the Mediterranean.

NOTES

- 1 DeVries 2008.
- 2 Hansen 2006b: 93. For the extent of the harbor and its facilities, see von Eickstedt 1991; Garland 2001.
- 3 Scheidel 2011: 24–9 argues very plausibly that the suppression of piracy and reduction of multiple, and sometimes predatory, tolls played a critical role in increasing security and predictability for merchants and keeping down transport costs during the Roman Empire, but this phenomenon surely predates the Roman Empire. For Athenian, and later Rhodian efforts to decrease the risk to shipping and to consolidate and control tolls and costs to merchants trading in the Black Sea, see Gabrielsen 2007. For the significant, and occasionally crippling, effect of piracy and warfare in the Eastern Mediterranean during the Venetian and Ottoman periods, see Harlaftis 1996: 4–5.
- 4 See Casson 1954; Reger 1994 for a healthy dose of caution about the importance of Delos as a rival of Rhodes in Hellenistic Mediterranean trade.
- 5 For the major ports of the Classical and Hellenistic periods, see Blackman 1982; 2008. Although the Piraeus was an outstanding natural harbor, fully furnished, despite only limited need, with lighthouses, harbor moles, quays and jetties, the site of Alexandria was significantly improved by the creation of the massive Heptastadion harbor mole and the world-famous Pharos lighthouse. See Goddio *et al.* 1998; Millet and Goiran 2007; Khalil 2008; Wilson 2011: 224–5. The harbor at Cnidus was especially noteworthy for its ambitious harbor moles and quays. At Delos, 17,00 m of quays were constructed along a shoreline of around a kilometer (Blackman 1982: 202).
- 6 See Isoc. 4.42; Thuc. 2.38.2; [Xen.] *Ath. Pol.* 2.7; Xen. *Vect.* 3.1; 5.2–4; Isager and Hansen 1975: 19–34; van Alfen, Chapter 12 in this volume.
- 7 After Isager and Hansen 1975: 34.
- 8 Erxleben 1974.
- 9 Fletcher 2007: 116–19; Naso and Trojsi 2009.
- 10 Note the claim of Critias, fr. 2 West lines 5–14, that ‘The Etruscans’ beaten gold *phiale* is best, as is their bronze that decorates the house, whatever its use,’ cited by Greene, Lawall and Polzer 2008: 685. For further archaeological evidence, see note 86 to this chapter.
- 11 For which, see Aubet 2001.
- 12 Cristofani 1989; Camporeale 2001: 78–101; Bourdin 2006.
- 13 See Archibald 1998: 177–96, 213–81 for archaeological evidence of the luxury goods traded by the Greeks into Thrace, and Gabrielsen and Lund 2007, with references, for the Black Sea trade. Pace Braund 2007, modern skepticism about the feasibility of large-scale Black sea grain exports are surely baseless. The Black Sea was the backbone of Greek trade in the nineteenth and early twentieth centuries, with grain exports from England going from 2 million quarters in 1837 to more than 50 million quarters in 1906. See Harlaftis 1996: 14 and table 1.2.
- 14 See Cary 1924; Cunliffe 1988; Sherratt and Sherratt 1993.
- 15 Assuming Hansen 1988a is reasonably accurate with his estimate of 250,000 for the population of Attica in the fourth century.

- 16 Lane 1966: 157, note 11.
- 17 Assuming a price of wheat at Athens of 5.5 drachmas, which is typical for the late fifth and early fourth centuries BCE, and noting from Zannini 1999: 473–502 that in the late 1580s a *staro* or 35.2 litres of wheat sold for 7.4 lire, and remembering that one ducat is 6.2 lire, a ducat should have the purchasing power of 3.09 drachmas.
- 18 See Thuc. 7.28.4; Blamire 2001: 114, note 106.
- 19 See Hansen 2006b.
- 20 Our population estimate, based largely on fourth-century evidence, will be somewhat inflated for this immediate postwar period, since Athens had had little time to recover from the casualties of the Peloponnesian war, and, perhaps more importantly, a significant segment of the non-citizen population will presumably have fled, at least temporarily, from the effects of war and economic crisis, and the thirty tyrants' disastrous and brutal repression, much of it directed at metics.
- 21 See IG XI(2) 161A, line 26, cited by Vélissaropoulos 1980: 208 and note 20.
- 22 Polyb. 30.31.12. For scholarly discussion, see Gabrielsen 1999: 202–9; Berthold 2009: 208 and note 35. Both Gabrielsen and Berthold are right to emphasize that the sudden drop in Rhodian commerce had less to do with the attractions of the tax-free status of Delos as a (probably temporary) loss of confidence in Rhodes, related as much to fear of further Roman sanctions, and even the possibility of hostilities, given that the Romans were dragging their feet on making a treaty.
- 23 Beloch 1886: 226–7.
- 24 For conversion of drachmas using wheat equivalents we note Pritchett and Pippin 1956: 196–8 for typical wheat prices of 5.5 dr. per *medimnos*, and Lang and Crosby 1964: 44, which gives the *medimnos* as 52.416 L. One drachma therefore buys 9.53 L of wheat. Note that the purchasing power of the Florentine florin in 1427 can be calculated as 146.4 L of wheat, using Goldthwaite 1980: xv; 429, 436, 439. The purchasing power of the Venetian ducat, equivalent to 29.49 L of wheat in the 1580s, can be calculated using data from Sohm 2010: 205, 210.
- 25 See Dauntton 2007: 200–2 with further references.
- 26 See Mitchell and Deane 1962: 450–1 (External trade B. 1772–1804).
- 27 See Mitchell and Deane 1962: 287–8 (Overseas Trade 4).
- 28 For a detailed recent survey of the ancient evidence and modern controversies, albeit one which is unduly skeptical of the likelihood of significant imports from the Black Sea in the fifth century BCE, see Braund 2007.
- 29 Dem. 20.31–32. Some modern scholars have speculated that Athenian grain imports may have reached as much as 2.275 million *medimnoi*, but this ignores the domestic production of wheat and the role of wine, olive oil and other foodstuffs in the diet.
- 30 De Vries 1974: 172 points out that in 1649 total Dutch grain imports were 112,901 lasts or approximately 225,802 tons. Grigg 1980: 149, table 21 yields a population of the Netherlands as a whole of 1.8 to 1.9 million in 1650.
- 31 In 1680, Dutch grain imports were 64,535 lasts or 129,072 tons, or 67.9 kg per capita: De Vries 1974: 86, table 3.1.
- 32 For English wheat imports, see Mitchell and Deane 1962: 97 ff. table 10, and for the relevant population figures, see Mitchell and Deane 1962: 9–14.
- 33 De Vries 1974; De Vries and van der Woude 1997: 414–19.
- 34 See Saprykin 1994.
- 35 See Kron 2002; 2008a; 2012 for discussion and bibliography.
- 36 Van der Mersch 1994; Brun 2004.
- 37 See Harlaftis 1996: 11, Figure 1.3; 47, Table 2.5. For the even more restricted farming and trade regime in the Venetian and Ottoman periods, see Davis and Davies 2007.
- 38 For the capacities of Greek and Roman merchant ships, see Wallinga 1964; Casson 1971: 186–200; Pomey and Tchernia 1978; Vélissaropoulos 1980: 61–5; Turfa and Steinmayer 1999; Tchernia 2011; Boetto 2008: 120–1; Wilson 2011: 213–17.

- 39 Wallinga 1964: 28; Casson 1971: 173–4. The explosive period of innovation in warship technology in the Hellenistic period should provide ample confirmation. See, for example, Casson 1971: 97–135, 137–40.
- 40 Vélissaropoulos 1980: 63 cites Launey 1933 = *IG XII*, 348 for the Thasos harbor regulation barring use of first harbor for ships of less than 3,000 talents, or 78 tons, if we are correct to use the Euboean standard, and bars the use of the second for those of less than 5,000 talents or 130 tons. For the same observation see Casson 1971: 171, note 22. For an analysis of the archaeological remains of the harbor, see Archontidou-Argyri, Simossi, Empereur 1989.
- 41 Casson 1971: 171 with note 22.
- 42 Vélissaropoulos 1980: 63, note 46.
- 43 For the relatively common use of this term by other authors, see Casson 1971: 172, note 25.
- 44 Wallinga 1964: 28.
- 45 Casson 1971: 171–3.
- 46 Casson 1971: 184–9; Boetto 2008: 120–1. Particularly notable is Papyrus Bingen 77, noting a grain ship returning from Ostia to Alexandria and loaded with between 525 and 700 tons of grain.
- 47 See Ath. 5.206d–209b; Casson 1971: 191–9; Castagnino Berlinghieri 2010; Meijer and Sleeswyk 1996; Turfa and Steinmayer 1999.
- 48 Casson 1971: 186 argues, very implausibly, that the grain measures in Moschion's description are *modii* rather than *medimnoi*, thereby significantly underestimating the ship's cargo. For a convincing case against Casson's reading, see Duncan-Jones 1977; Turfa and Steinmayer 1999.
- 49 See Turfa and Steinmayer (1999): 106, table 1.
- 50 For the biases in our record, note Parker 1992: 6–7, particularly his statement that of 1,000 wrecks recorded by Greece's department of Underwater Antiquities, only 80 were known to him. One need only compare the maps in Parker 1992: 4, 5, 7, 8, 10 and 11 from the Western Mediterranean with the map 13, showing wrecks from the Aegean, overwhelmingly clustered around SW Turkey, an important trade hub to be sure, but also a popular hunting ground for the INA's busy marine archaeologists, to see how little we know of Classical Greek wrecks. See also the cautionary remarks of Parker 2008; Wilson 2009. We should also be aware of the serious problem of damage from trawling and the looting of wrecks, which progressively degrades the evidence. See Parker 1992: 354–5, 365–6, 395, 432, 438. Recent attempts to find methods of surveying deep-water wrecks have confirmed that Greco-Roman ships did not simply sail along coastal routes. See McCann and Oleson 2004; Sakellariou *et al.* 2007; Weitemeyer and Dohler 2009. Nevertheless, the shipwrecks most likely to be discovered are overwhelmingly found in shallow coastal waters and far more likely, therefore, to be small ships sailing (but not tramping: see Parker 1992: 21) along the coasts.
- 51 See, for example, Casson 1971: 189–90 and Wilson 2011: 212–17.
- 52 Hadjidaki 1996; Turfa and Steinmayer 1999: 105.
- 53 Hadjidaki 1996: 558.
- 54 As noted by Casson 1971: 172, note 23.
- 55 Casson 1971: 189 notes ratio of length to beam of most modern, and ancient, merchant ships normally ranges from 3:1 to 4:1.
- 56 Boetto 2008: 121 citing Pomey and Tchernia 1978.
- 57 De Vries and van der Woude 1997: 404. Smaller coastal ships would typically range from forty to eighty tons, and likely represented the vast majority.
- 58 Lane 1964: 231. Such ships represented a minority of the Venetian fleet, particularly in the fifteenth and sixteenth centuries. As Scheidel 2011: 34 notes, citing Lane 1934: 102, in 1423, 3,000 of the 3,300 ships in a Venetian census of shipping were of less than 100 tons, and only around 1% were above 240 tons.
- 59 In 1787, the 1,427 ships built in the British Empire averaged only 82.7 tons burden (97 tons for the 940 ships built in England). By 1818, these figures had risen modestly to 97.5 and 120 tons, respectively. See Mitchell and Deane 1962: 220 (Transport 2 A).

- 60 Mitchell and Deane 1962: 221.
- 61 Casson 1971: 185 with note 8. We should also note that Casson fails to distinguish between the displacement tonnage and cargo capacity of the *Syracusia*, when claiming that a wooden vessel of such a size is unattested. For example, the Liberty Ship, the standard World War II freighter, with a displacement tonnage of 3,600 tons, could carry 10,500 tons of cargo. See Lane 1964: 217.
- 62 Turfa and Steinmayer 1999: 108–9, citing Levathes 1994): 7, 80, notes massive ships of the Chinese treasure fleet (1405–1433 CE) measuring 408 feet long with a 166-foot beam, likely displacing 5,000 tons or more. A tradition of building massive wooden sailing ships continued in the United States through the 1880s, even as iron hull technology advanced, with the construction of the *Wyoming*, a ship of 3,781 tons, and the ‘big wooden four,’ built by Arthur Sewall and Co. of Bath, Maine, including the *Rappahannock* of 3,185 tons, a three-masted ship like the *Syracusia*, and the *Roanoke*, of 3,539 tons. See Jobé (1967): 226.
- 63 See, for example, Scheidel 2011: 32.
- 64 Cohn 2005: 469.
- 65 For the competitiveness and strong performance of wooden sailing ships, until at least the 1880s, see Graham 1956. Until the development of anti-fouling paint, wooden sailing ships were often faster and more effective for hauling cargo, especially over long distances (76–7).
- 66 For the size, speed and economic competitiveness of the clipper ships of the late nineteenth century, see Evans 1964.
- 67 See Carter and Lewis 1990: 32–7.
- 68 See DeVries 1984: 39, table 3.7; Bintliff and Snodgrass 1985; Hansen 2006b; Bintliff, Howard and Snodgrass 2007; de Callatay 2012.
- 69 See Patten 1978.
- 70 See Defoe 1726.
- 71 See MacKendrick, Brewer and Plumb 1982, exaggerating, however, the breadth of consumer demand; Weatherill 1988; Berg 2005; DeVries 2008.
- 72 For the low standard of living of the English rural laborer, see Hasbach 1908.
- 73 Allen, Bengtsson and Dribe 2005.
- 74 Pace MacKendrick, Brewer and Plumb 1982, but see Weatherill 1988; Berg 2005 for the rather feeble size of the privileged and middling classes, wealthy enough to play an important role in supporting (through their consumption) the growth of English craft manufacture and industry. For the dependence of most English manufacturers on European and particularly colonial North American markets to compensate for their weak domestic markets and demand, see, for example, Thistlethwaite 1958; Berg 2005: 282–7.
- 75 For what follows, see Kron 2005; 2011; 2014. See also Mayer 2012 and de Callatay 2012.
- 76 Whereas the richest 1% of the English population in 1911 held 67% of the total wealth of the society, the poorer 80% held less than 3 or 4% of the total wealth of the society and virtually 60% of the population had no wealth whatsoever, at Athens, the richest 1% possessed 30% of the wealth of the society, comparable to many contemporary societies. At the beginning of the fourth century barely 14% of the Athenian people did not own some land, and, when Antipater imposed an oligarchical constitution in 322 BCE, almost 30% owned the substantial sum of 2,000 drachmas, equivalent in purchasing power to £300, the extremely high wealth qualification demanded for members of Parliament, and thirty times the probate wealth threshold of £10 held by a mere 17% of the English population in the early twentieth century. See Kron 2011.
- 77 MacKendrick, Brewer and Plumb 1982.
- 78 See Berg 2005: 219–27, esp. 220, table 6.1.
- 79 See DeVries 1974: 214–23.
- 80 Goldthwaite 2010: 279.
- 81 See, for example, DeVries 1974; Goldthwaite 1993; DeVries and van der Woude 1997; DeVries 2008; Goldthwaite 2009; Spear and Sohm 2010.

- 82 Graham 1974; Walter-Karydi 1998.
- 83 For regional schools in metalwork and bronze sculpture, see Treister 1996: 197–213, 298–324 with references; Ambrosini in Rivière 2009: 128–31. For the art of sculpture in marble, see Stewart 1990.
- 84 See in particular Boardman 1999; Fletcher 2007. For Greek trade with the Western Mediterranean, see the excellent synthesis in Krinzing 2000, as well as Kerschner 2004; Bezaczy 2008; Kerschner and Mommsen 2009.
- 85 For the influence and penetration of Persian art, see in particular Miller 1997; Archibald 1998: 179–84; Paspalas 2000; Zournatzi 2000; Treister 2010. For Achaemenid imports to Greece, see Chapters 12 and 14 in this volume.
- 86 See Stewart 1979: 101–14.
- 87 Arist. *Pol.* 1278a: ‘In oligarchies on the other hand, though it is impossible for a hired laborer to be a citizen ... it is possible for an artisan; *for even the general mass of the craftsmen are rich.*’
- 88 Pace Vickers and Gill 1994: 93–7.
- 89 Cook 1997: 260.
- 90 See Goldthwaite 2009: 405–6 for the huge fortune built up by Michelangelo, who left an estate worth fl. 22,000, having earned perhaps as much as fl. 50,000 over lifetime.
- 91 Piero d’Andrea and his son Giovanni had a net worth before deductions of 1,000 florins, renting a shop in the Via Tornaquinci for 10.5 florins, and owning land worth 709 florins scattered at Settignano, where Piero lived, at Porta a Faenza outside the walls, and at Signa outside the city. See Goldthwaite 1980: 234–5.
- 92 See Sohm 2010: 210–12.
- 93 Osborne 2007.
- 94 Potter 1979: 72; Barker and Rasmussen 1998: 214–15; Naso and Trojsi (2009).
- 95 For the limited monetary value and non-luxury status of even fine and decorated pottery, see Amyx 1958: 174–217; Johnston 1979; Isager and Hansen 1975: 41; Vickers 1985; Sparkes 1991: 129–31; Vickers and Gill 1994.
- 96 Museo Nazionale di Spina 2652, T936, T313.
- 97 Museo Civico Archeologico 269, 18108.
- 98 Museo Campano 204; Basel, Antikenmuseum und Sammlung Ludwig BS1906.296.
- 99 British Museum E257; Munich, Antikensammlungen, J326.
- 100 Museo Nazionale Tarquiniese RC2240.
- 101 St. Petersburg, State Hermitage Museum 2227.
- 102 Oxford, Ashmolean Museum 280.
- 103 Rhodes, Archaeological Museum 13205.
- 104 London, British Museum 1885.12–13.18.
- 105 University of Mississippi, University Museums 1977.3.88.
- 106 Christie’s, XXXX214837.
- 107 Gioia, Museo Archeologico di Gioia MG398.
- 108 Thistlethwaite 1958: 265, note 1.
- 109 Thistlethwaite 1958: 266.
- 110 I have examined the material compiled in the Beazley archive website, with additional material from Beazley’s own work. See Beazley 1963; 1971 and the pottery archive at <http://www.beazley.ox.ac.uk/>.
- 111 Tuna-Nörling 2002.
- 112 Herbert 1977.
- 113 See, for example, DeVries 1977.
- 114 For Beirut, see Hitzl and Hitzl 2006.
- 115 Stewart and Martin 2005. For the evidence of strong Greek trade ties with Cyprus see Demesticha 2011: 48–9 with up to date bibliography.
- 116 Fletcher 2007.
- 117 For the Etruscan market for Athenian decorated pottery, see, for example, Webster 1972: 291–3; Spivey 1991; Kracht 1991: 150–1 and *passim*; Barker and Rasmussen

- 1998: 203–5, 214; Giudice 1999; Osborne 2001; Lewis 2003; Fletcher 2007: 100 with figures 169–71, 121–4; Ambrosini 2009; Baldoni 2009. For the great appetite for Attic fineware imports in South Italy and Sicily, see, for example, Carpenter 2003; Giudice 2006. Large-scale local workshops were eventually created in multiple sites in Magna Grecia, and not simply among the Greek colonial population. For the production of South Italian painted pottery, see, for example, Trendall 1967; 1989. Recent studies have even revealed evidence for Attic pottery geared to the Thracian market (Oakley 2009).
- 118 Our statistics are based primarily upon Beazley 1963. For the Levant in particular, excellent recent work on the massive Athenian imports are synthesized and brought up to date by Stewart and Martin 2005.
- 119 For the limited monetary value and non-luxury status of even fine and decorated pottery, see *supra* note 96. For a discussion of the use of pottery as a proxy for other archaeologically invisible exports, see Osborne 2007.
- 120 For a rare synthesis regarding the trade in stone, tile, metals and timber at Athens, see Thompson 1980. In seventeenth century Holland, as in nineteenth century England, timber was one of the largest imports, in terms of value, but especially in terms of bulk. See De Vries and van der Woude 1997: 423–9. In the 1640s, a Dutch fleet of 387 ships travelled to Norway several times a year, and over a period of eight months in 1652, during the war with England, 1,000 ships set out, with a capacity to import up to 375,000 m³ of wood. See De Vries and van der Woude 1997: 423.
- 121 Porten and Yardeni 1993: 82–193.
- 122 For the ancient timber trade, see Meiggs 1982.
- 123 Kuniholm 2002.
- 124 Fontaine and Foy 2007.
- 125 Treister 1996: 347–61.
- 126 See McCann and Oleson 2004: 92 with note 6, 99 with note 15 for a list of ancient shipwrecks with cargoes of stone, and 91–117 for a ship with a cargo of 8 tons of granite. See also, *inter alia*, Carlson and Aylward 2010.
- 127 Ath. 5.197A–202B; see also Fraser 1972: 136–7. As Rostovtzeff 1941: 1411, note 175 points out, the weight of all the gold and silver plate was 10,000 talents, and silver plate is very frequently mentioned in the correspondence of Zeno.
- 128 See Vickers 1990.
- 129 See Fol, Nikolov, and Hoddinott 1986; Cook 1989. For other Classical treasures, note also the Tarentine silver hoard discovered in 1886 described in Wuilleumier 1930.
- 130 Panagopoulou 2007.
- 131 Brought out very effectively from this and other literary sources by Vickers 1985; Vickers 1990; Vickers and Gill 1994: 55–76. For a recent survey of plate from Macedonia, see Zimi 2011.
- 132 See Treister 1996: 381–3 and note in particular the inventory of treasures displayed in M. Aemilius’ triumph, quoted from Diod. Sic. 31.8.9–13.
- 133 Fol, Nikolov and Hoddinott 1986: 16.
- 134 See, for example, Gorbunova 1971b; Metropolitan Museum of Art 1975; Archibald 1998: 177–84; Mordvinseva and Treister 2007: 5–84, 154 map 1; Teleaga 2008.
- 135 See Pfrommer 1990 for the most complete synthesis, in particular 148 figure 23; 155 figure 26; 158 figure 27; 173 figure 32; 178 figure 35; 179 figure 34; 182 figure 35; 186 figure 36, conveniently collected together as Treister 1996: figures. 42.1–2, 43.1–2, 45.1–2, 46.1–2. See also Archibald 1998: 190–3 for the analysis of Thracian jewelry, a good deal, but by no means all, imported Greek or Macedonian work, found in several rich burials near Duvanli, in particular three rich female burials yielding 1265.35 gm, 436.35 gm and 158.5 gm of gold respectively. More recently, see Pfrommer and Markus 2001; Treister 1996; Jackson 2006; Mordvinseva and Treister 2007.
- 136 For images, see Metropolitan Museum of Art 1975: no. 171 plates 31–3; Galanina and Grach 1986: 95–8 figure 118–21. For further discussion, see Stähler 1997: 117–96.

- 137 See Pfrommer 1990: *passim*; Treister 1996: *passim*; Treister 2001: *passim*; Mordvinseva and Treister 2007.
- 138 Moreno 2007b: 74. For art works designed to appeal to the Thracians, see Oakley 2009. For the difficulty of distinguishing Greek and Thracian work, for example, and the vitality of non-Greek metalworking under the stimulus of Greek craftsmen and trade, see Szymanska 1984; Fol, Nikolov and Hoddinott 1986; Archibald 1998: 178–9, 181.
- 139 See Johnston 1978: 79–80; Gill 1987: 51 with notes 12–13. Although a few exceptional artworks may have been diplomatic gifts to rulers or influential chieftains, as Archibald 1998: 193–4 suggests, it seems clear from the wide range of material in the Danubian graves, and the remarkably broad social cross-section involved, that trade on a significant scale, and not just gift exchange, is operative in the ancient Black Sea, as in the nineteenth century.
- 140 See Treister 1996: 362.
- 141 See Craddock and Giumla-Mair 1993; Wallace-Hadrill 2008: 373–5. For the analysis showing a similar technique in the celebrated Mycenaean daggers, see Demakopoulou *et al.* 1995.
- 142 See Rolley 1986: 178–84 and Barr-Sharrar 2008, a recent monograph with full references.
- 143 See La Niece 1993.
- 144 Archibald 1998: 184–90.
- 145 Teleaga 2008: 5–54 for a catalogue of sites. In many regions, as many as 10–20% of all graves contain some Greek imports, particularly along the Dniester. See 1, plate 1.
- 146 Teleaga 2008: 55–118. For an analysis and synthesis of the distribution of the amphoras, see 296–305.
- 147 Teleaga 2008: 119–25.
- 148 Teleaga 2008: 126–56. The distribution of red-figure craters is very striking evidence of the vitality of Greek trade links deep into the Ukraine. See 138 map 19.
- 149 Teleaga 2008: 156–200.
- 150 Teleaga 2008: 200–32.
- 151 Teleaga 2008: 232–51.
- 152 Teleaga 2008: 289–95.
- 153 Teleaga 2008: 258–82.
- 154 For the assemblage in the princely burial at Vix, including a large number of Attic red-figure vases, see Rolley *et al.* 2003 and Petit *et al.* 2003. For the range of Greek imports in Gaul, see Rolley 1995. For the controversy on the logistics of its export, see Cook 1979; Wells 1980: 53–5; Treister 1996: 84–5.
- 155 Rolley 1986: 140–50.
- 156 As noticed, for example, by Rolley 1986: 192–3.
- 157 See Zimmermann-Ekseify 1998.
- 158 Note the frequency of large consignments of black gloss ware on ancient shipwrecks. See, for example, Parker 1992: 80–1 no. 124, 118–19 no. 236, 160 no. 355, 191 no. 448, 197–8 no. 468, 200–1 no. 472, 241 no. 593, 281–2 no. 715, 313–14 no. 820, 367–9 no. 986, 384 no. 1032, 392–4 no. 1058, 392–4 no. 1065, 451 no. 1230; Hadjidaki 1996.
- 159 See Wallace-Hadrill 2008: 422–35. The Amiternum couch in the Capitoline Museum is one of the most luxurious and well-preserved Late Hellenistic examples. See 424–5 and figures 8.42–4.
- 160 On Greek furniture, see Richter 1966; Faust 1989; Andrianou 2006.
- 161 See Treister 1996: 203.
- 162 See Treister 1996: 361–4 with Faust 1989: maps 1–2.
- 163 For the Mahdia wreck, see Parker 1992: 252–3 no. 621 (dates 110–90 BCE); Hellenkemper Salies *et al.* 1994; Wallace-Hadrill 2008: 366–71.
- 164 See Bol 1972; Rolley 1986: 193–4; Arribas *et al.* 1987; Parker 1992: 40 no. 1, 88 no. 147, 176 no. 396, 259–60 no. 650, 332–4 no. 879, 367 no. 985, 369–70 no. 993, 392–4 no. 1058, 412 no. 1113; Gelsdorf 1994; Baudoin, Liou, and Long 1994: 31–60; Mattusch 1996: 87–94.
- 165 Treister 1996: 354 citing the judgment of Domergue.

- 166 See Mattusch 1994; 1995.
- 167 See further Treister 1996: 361–3.
- 168 For a catalogue and analysis of the impressive range of sculpture and reliefs found in a sample of five discovered far from palatial Pompeian houses, see Dwyer 1982.
- 169 See Wallace-Hadrill 2008: 391–2, who notes that Tassinari catalogued 1,678 bronze vessels found in situ in Pompeii, and estimates that there are more than 4,000 uncatalogued bronze and iron vessels from Pompeii and Herculaneum in the storerooms of the Naples Museum.
- 170 For the continued productivity and appeal of Athenian sculptors through the Hellenistic and Roman period, Stewart 1979 remains a classic.
- 171 Rolley 1986: *passim*; Treister 1996: 327–8.
- 172 Mattusch 1996: 1 citing Zimmerman 1989 for the preservation of 1,700 horse figurines from seventy different sites.
- 173 See Treister 1996: 241–3 for an excellent survey of some of the evidence.
- 174 Stewart 1990: I: 237.
- 175 Plin. *HN* 34.36–7 (translation excerpted from Mattusch 1996: 33–4). Note, however, that the manuscript reading mentions 70,000 statues on Rhodes, and this reading, exaggerated or not, makes rather more sense of Pliny’s text, since 3,000 statues could be collected for a single display in Rome. At least some of the dedications to the gods displayed on the Acropolis at Athens were inventoried in inscriptions. See Harris 1992.
- 176 Plin. *HN* 34.37. As Treister 1996: 242 points out, our fragmentary literary sources list over thirty sculptors working in the fifth century BCE, and describe many famous masterpieces by the most prominent sculptors, including twenty-four by Myron and twenty each by Polycleitus and Pheidias.
- 177 See Treister 1996: 237–44.
- 178 See Gelsdorf 1994 for a recent synthesis.
- 179 See Wallace-Hadrill 2008: 365–6 for an excellent statement of the case, and recall Stewart 1979 for the important trade of Athenian workshops exporting to Rome.
- 180 See the detailed publication of Künzl 1993. The plunder included dozens of metal vessels, adding up to a total of 219.5 kg iron; 197.3 kg copper; 10.03 kg silver; 1.54 kg tin.
- 181 For iron agricultural tools in Roman Italy, which has been better studied, see Forni 1989 and 2006.
- 182 But see Treister 1996: 218–29; Teleaga 2008: 289–95.
- 183 See Treister 1996: figure 40.
- 184 Kron 2008b.
- 185 See Schmiechen 1984: 50–79.
- 186 Booth 1902–3: *passim*.
- 187 Goldthwaite 1980: 233–4.
- 188 See, for example, Parker 1992: 111–12 no. 450, 261–2 no. 658.
- 189 Cahill 2002: 252.
- 190 See Craig, Rygiel and Turcotte 2002.
- 191 Erdkamp 1999.
- 192 Goldthwaite 2009: 282: ‘Because of the integration of the urban and rural economies, labor was not much cheaper in the countryside around Florence limited the availability of wage labour even on a seasonable basis. Given the mix of cropping that characterized Tuscan agriculture, sharecroppers were busy working their land throughout the year, and there was not a landless class of day laborers of any size available for employment.’
- 193 Goldthwaite 2009: 302–4.
- 194 Goldthwaite 2009: 337 notes that 40% of the cost of wool cloth and 65–70% of silk cloth comes from raw materials.
- 195 See Goldthwaite 2009: 301–2 for the water-powered fulling mills located all along Arno outside of city.
- 196 Goldthwaite 2009: 300 points out that most of the equipment and tools required for textile production were owned by the workers themselves, working in rented premises. Dyer’s

equipment was worth only fl. 50, a silk throwing machine fl. 25, even the most expensive looms for silk brocades fl. 25–35, and wool-working looms only fl. 5, all well within the means of skilled artisans with wages of fl. 35–70.

¹⁹⁷ Goldthwaite 2009: 304–6.

¹⁹⁸ Cahill 2002: 250–2.

¹⁹⁹ See Goldthwaite 2009: 333.

APPENDIX

COMMODITIES IN CLASSICAL ATHENS: THE EVIDENCE OF OLD COMEDY

David M. Lewis

The following collection gathers together the evidence of Old Comedy to give a sense of the wide variety of goods that were available in Classical Athens, and particularly in the *agora*. It groups them by category; references to comic fragments follow Kassel–Austin’s *Poetae Comici Graeci*. I have aimed at being comprehensive, and not just limiting ourselves to references where it is clear that market exchange is mentioned. When a commodity is mentioned in Old Comedy, I have added it to our list, for it shows the comic poets’ awareness of the material stuff of everyday life. Yet if we compare these groups of commodities with the attested occupations in Attica, it is clear that many if not most of these items were subject to market exchange – that is, they could either be bought in the marketplace or from specialised craftsmen and retailers, even if they were also subject to other forms of resource allocation (e.g. gift or autarkic consumption, for that matter). I have thus sought to match each category of goods with the individual occupations devoted to their production and retail.

Several methodological considerations are worth bearing in mind. First, the list is limited in its extent: we have not included the evidence of Middle or New Comedy, nor of other literary texts or inscriptions (we also omit the evidence of the comic *adespota*). A comprehensive list would include all literary evidence and synthesise this with archaeological and iconographic data. Our appendix is intended merely as a preliminary sample to convey some notion of the sheer variety of goods available in the Athenian economy and should be seen as a minimal list. Secondly, the English translation of many Greek terms in the following catalogue is not always secure; I have generally followed the definitions given in *LSJ*⁹. Thirdly, the broad headings used here are for convenience of organisation and should not be seen as hard-and-fast groupings. Some items may have existed in various forms. For example, many vessels of a certain type could be made of clay but also of metals; other items were made of composite

materials and could potentially have been placed under several of our general headings. I therefore ask the reader to take these headings not as a rigid taxonomy but as a convenient method of organising the material. Fourthly, like occupations, some words are general terms. I have left out the term *skeue* as it is a broad term for utensils and furniture. Similar broad terms (e.g. *lachana* [greens]; *ichthus* [fish]) have likewise been omitted.

Finally, it is difficult for us living in modern economies to fully appreciate the seasonal rhythms of availability of different products. Many agricultural products were not available all year round: Theophrastus (*Char.* 14.9), for example, pokes fun at the absent-minded man who tells off his slave for not buying cucumbers in winter; and Aristophanes in the *Seasons* (fr. 581 K-A) wistfully lists many seasonal items that could not be bought all year round. The sea lanes too were closed for much of the year, cutting off or reducing the availability of many products. The following list is designed to convey an impression of what was available in the *agora* in general and does not fully convey the rhythms of availability.

AGRICULTURAL AND GARDEN PRODUCTS

Related occupations: seed-seller (*spermatopôlês*); pulse-seller (*ospriopôlês*); honey-seller (*melitopôlês*); onion-seller (*krommyopôlês*); greengrocer (*lachanopôlis*); barley-dealer (*alphitopôlês/alphitamoibos*); nut-seller (*karyopôlês*); vine-dresser (*ampelourgos*); olive-picker/tender (*elaiologos/elaiokomos*); olive-seller (*elaiopôlês*); garlic-seller (*gelgopôlês*); farmer (*georgos*); gardner (*kêpouros*); sesame-seller (*sêsamopôlês*); bran-seller (*kyrêbiopôlês*); laurel-seller (*daphnopôlês*).

Grain (*sitos*: Ar. *Ach.* 758); **barley** (*alphita*: Ar. fr. 481, *Nub.* 176, 788, *Eq.* 857, 1009, 1104, *Pax* 368, 477, 636, *Thesm.* 420, *Vesp.* 300, *Pl.* 219, *Eccl.* 819, Cratin. fr. 23, Nicophon fr. 6, fr. 21, Stratt. fr. 14); **barleycorns** (*krithê*: Ar. *Eq.* 1101, *Pax* 1322, *Av.* 231, 565, 622, Pherecr. fr. 197; *kapanoi*: Pherecr. Fr. 250); **wheat** (*pyros*: Ar. fr. 428, *Av.* 566, 580, 622, 626, *Pl.* 986, Pherecr. fr. 67); **one-seeded wheat** (*zeia*: Ar. fr. 428, Pherecr. fr. 201); **sesame seed** (*sêsamê*: Ar. *Av.* 159); **bran** (*achyron*: Ar. fr. 78, fr. 234, *Ach.* 508; *kyrêbia*: Ar. *Eq.* 254, Cratin. fr. 339); **bean** (*kyamos*: Ar. fr. 372, *Eq.* 41, *Lys.* 537, Pherecr. fr. 201; *phaselos*: Ar. *Pax* 1144, Demetr. fr. 5); **lentil** (*phakos*: Ar. fr. 590, Eup. fr. 378, Pherecr. fr. 26, fr. 73); **pea** (*pisos*: Ar. fr. 22); **chickpea** (*erebinthos*: Ar. *Pax.* 1136, *Eccl.* 606, Pherecr. fr. 89, fr. 170); **chickling** (*arakos*: Ar. fr. 428); **garlic** (*skorodon*: Ar. fr. 5, *Ach.* 164, 521, 550, 761, 813, 831, *Eq.* 494, 600, 946, *Pax* 258, 502, 1000, *Thesm.* 494, *Ran.* 554, 987, *Vesp.* 679, *Eccl.* 404, **garlic from Tenos**: Ar. *Pl.* 718); **onion** (*krommuon*: Ar. *Ach.* 550, 1099, 1100, *Pax* 1129, *Lys.* 798, *Ran.* 564, *Pl.* 168, *Eccl.* 307); **horn onion** (*gêthyon*: Ar. fr. 5, *Eq.* 677; *gêteion*: Ar. *Ran.* 622, *Vesp.* 496, *Eq.* 677, Eup. fr. 275, Theopomp. Com. fr. 34); **saffron** (*krokos*: Ar. *Nub.* 51, Eup. fr. 270, Cratin. fr. 105); **tassel-hyacinth** (*bolbos*: Ar. fr. 128b, fr. 164, fr. 701, *Eccl.* 1092, Eup. fr. 337, *Pl. Com.* fr. 188, fr. 189); **mushroom** (*mykês*: Polioch. fr. 2); **oregano** (*origanon*: Ar. fr. 128a, fr. 128b, *Ach.* 874, *Eccl.* 1030; **pungent Arcadian oregano**: *Pl. Com.* fr. 169); **pennyroyal** (*glachôn*: Ar. *Ach.* 874); **anise** (*annêthon*: Ar. *Nub.* 982, *Thesm.* 486, Metag. fr. 18); **mustard** (*napu*: Ar. *Eq.* 631); **coriander** (*koriannon*: Ar. *Eq.* 676, 682, Alc. Com. fr. 17); **silphium** (*silphion*: Ar. fr. 128b, *Eq.* 895, *Av.* 534, 1579, 1582, 1585, *Pl.* 925; *kaulos*: Hermipp. fr. 63); **thyme** (*thymos*: Ar. *Pl.* 223, 282, Pherecr. fr. 177); **tufted thyme** (*herpyllos*: Ar. *Pax* 168, Cratin. fr. 105); **lavender** (*iphyon*: Ar. *Thesm.* 910); **hellebore** (*helleboros*: Ar. fr. 332, *Vesp.* 1487); **mastic**

(*schinos*: Ar. *Pl.* 720, Amips. fr. 24, Cratin. fr. 250); **laurel** (*daphné*: Ar. *Pl.* 1114, Amips. fr. 24, Theopomp.Com. fr. 48); **dropwort** (*oinanthé*: Cratin. fr. 105); **mint** (*minthé*: Cratin. fr. 136; *kalaminthé*: Ar. *Eccl.* 648); **spurge** (*tithymallos*: Ar. *Eccl.* 405 [Lakonian], Cratin. fr. 363); **asphodel** (*antherikos*: Cratin. fr. 363; *asphodelos*: Ar. fr. 693); **mullein** (*phlo-mos*: Cratin. fr. 363); **fennel** (*marathon*: Hermipp. fr. 75); **saltbush** (*adrappaxus*: Pherecr. fr. 80); **marjoram** (*amarakon*: Pherecr. fr. 138); **basil** (*ôkimon*: Stratt. fr. 71); **chic-ory** (*kichoreia*: Ar. fr. 304); **chervil** (*skandix*: Ar. *Ach.* 478, 480, *Eq.* 19, Telecl. fr. 40; *enthryskon*: Pherecr. fr. 14); **cress** (*kardamon*: Ar. *Nub.* 234, 236, *Thesm.* 616); **celery** (*selinon*: Ar. *Nub.* 982, Pherecr. fr. 138, fr. 158, Stratt. fr. 71); **leek** (*prason*: Ar. *Ran.* 621, Chionid. fr. 7, Theopomp.Com. fr. 18); **cabbage** (*rhaphanos*: Ar. fr. 111, Alc.Com. fr. 24, Call.Com. I fr. 26, Crates I fr. 19, Nichoch. fr. 18); **asparagus** (*aspharagos*: Amips. fr. 24, Cratin. fr. 363, Theopomp.Com. fr. 69); **chervil** (*anthryskon*: Cratin. fr. 105); **honey clover** (*melilôton*: Cratin. fr. 105, Pherecr. fr. 138); **mallow** (*malaché*: Pherecr. fr. 138); **horse parsley** (*hipposelinon*: Pherecr. fr. 138); **vetch** (*aphaké*: Ar. fr. 787, Pherecr. fr. 201); **akeanos** ([leguminous vegetable]: Pherecr. fr. 201); **purslane** (*andrachné*: Pl.Com. fr. 44); **cabbage** (*krambé*: Polyzel. fr. 10, Telecl. fr. 29); **lettuce** (*thridakiné*: Stratt. fr. 71); **garden cress** (*kardamon*: Ar. *Nu.* 234, *Vesp.* 455, Theopomp.Com. fr. 18); **cucum-ber** (*sikyos*: Ar. fr. 581, *Ach.* 520, 1001, Cratin. fr. 147, Phryn.Com. fr. 26, Pl.Com. fr. 65, Theopomp.Com. fr. 76); **gourd** (*kolokunté*: Ar. fr. 518, *Nub.* 327, Phryn.Com. fr. 65; *kolokynté*: Hermipp. fr. 69, Metag. fr. 18); **radish** (*rhaphanis*: Ar. fr. 264, *Nub.* 981, *Pl.* 544, Eup. fr. 338, Pherecr. fr. 190, Cratin. fr. 350; *raphanidion*: Pl.Com. fr. 186); **sprout or edible root** (*kaulos*: Ar. *Eq.* 824); **beet** (*teutlon*: Ar. *Pax* 1014, Crates I fr. 16, Pherecr. fr. 113; *teutlion*: Ar. fr. 128b); **turnip** (*gonggylis*: Ar. fr. 581, Call.Com. I fr. 26; **Kephisian turnip**: Crates I fr. 30); **olive** (*elaia*: Ar. fr. 406, fr. 408, fr. 581, *Ach.* 550, *Ran.* 988, *Eccl.* 308, Eup. fr. 338, Polioch. fr. 2); **tree-ripened olive** (*drypepés*: Ar. *Lys.* 564, Call.Com. I fr. 26, Chionid. fr. 7); **fig** (*sykon*: Ar. fr. 110, fr. 479, fr. 581, *Pax* 575, 1145, 1249, 1324, *Vesp.* 303, Demetr. fr. 5, Nicophon fr. 20, Pherecr. fr. 103, fr. 139, Pl.Com. fr. 62, Polioch. fr. 2, Stratt. fr. 3, fr. 49; **Phibalean fig**: Ar. *Ach.* 802, Hermipp. fr. 53, Pherecr. fr. 85); **small fig** (*sukarion*: Eup. fr. 191); **apple** (*mêlon*: Ar. *Pax* 1001, *Lys.* 856, *Vesp.* 1268, Crates I fr. 43, Cratin. fr. 257, Epil. fr. 2, Eup. fr. 176, Hermipp. fr. 63, fr. 77, Pherecr. fr. 113, fr. 158, Canthar. fr. 6 [Kydonian]); **pomegranate** (*rhoa*: Ar. fr. 52, fr. 120, fr. 623, *Pax* 1001, Epil. fr. 2, Hermipp. fr. 37); **pear** (*apion*: Ar. fr. 581; *achras*: Eup. fr. 40, Hermipp. fr. 63, Telecl. fr. 34); **sage-apple** (*sphakos*: Ar. *Thesm.* 486, Cratin. fr. 363); **date** (*karpos phoinikos*: Hermipp. fr. 63 [from Syria]); **myrtle berries** (*myrta*: Ar. *Av.* 160, Demetr. fr. 188, Theopomp.Com. fr. 68); **myrtle** (*myrsiné/myrrhiné*: Ar. *Av.* 43, Apolloph. fr. 5); **myrtle berry** (*myrton*: Ar. fr. 581, *Av.* 160, 1100, Pherecr. fr. 158); **strawberry** (*mimaikylon*: Ar. fr. 698, Crates I fr. 43, Pherecr. fr. 158, Theopomp.Com. fr. 68); **bergamot** (*sisymbriou*: Ar. *Av.* 160, Cratin. fr. 105, fr. 257, Pherecr. fr. 2); **plum** (*kokkymêlon*: Ar. fr. 621); **grapes** (*botrys*: Ar. *Eccl.* 817); **nut** (*karyon*: Ar. *Vesp.* 58, Metag. fr. 18, Philyll. fr. 18, fr. 24); **almond** (*amygdalé*: Ar. fr. 605, Pherecr. fr. 158, Philyll. fr. 18, fr. 24, Eup. fr. 271 [from Naxos], Phryn.Com. fr. 73 [from Naxos], Hermipp. fr. 63 [from Paphlagonia]); **hazel nut or acorn** (*balanos*: Cratin. fr. 93 [from Phigeus], Hermipp. fr. 63 [from Paphlagonia], Nichoch. fr. 18, Pherecr. fr. 13); **acorn** (*phêgos*: Ar. *Pax* 1137); **rose** (*rhodon*: Ar. *Eq.* 966, Cratin. fr. 105, fr. 257, Pherecr. fr. 138); **lily** (*leirion*: Cratin. fr. 105); **white lily** (*krinon*: Cratin. fr. 105, fr. 257); **larkspur** (*kosmosandalon*: Cratin. fr. 105, Pherecr. fr. 2, fr. 138); **violet** (*ion*: Ar. fr. 581 [for garlands], Cratin. fr. 105); **anem-one** (*anemône*: Cratin. fr. 105); **hyacinth** (*hyakinthos*: Cratin. fr. 105, Pherecr. fr. 138); **gold-flower** (*helichrysos*: Cratin. fr. 105); **martagon lily** (*hêmerokalles*: Cratin. fr. 105);

tree-medick (*kytisos*: Cratin. fr. 105, fr. 363); **poppy** (*mêkôn*: Ar. fr. 114, *Av.* 160); **honey** (*meli*: Ar. fr. 598, fr. 633, fr. 681b, *Ach.* 1041, 1130, *Pax* 252, 253, *Thesm.* 1192, *Vesp.* 676, *Av.* 224, *Pl.* 1121, *Magn.* fr. 2, *Pherecr.* fr. 50, *Pl.Com.* fr. 188); **honeycomb** (*schadônes*: Ar. fr. 333, fr. 581); **beeswax** (*kéros*: Ar. fr. 332, fr. 679, *Nub.* 149, 150); **milk** (*gala*: Ar. fr. 613, Cratin. fr. 149, *Pherecr.* fr. 113); **first-milk of animal [beestings]** (*pygos*: Ar. fr. 333, fr. 405, fr. 581, *Vesp.* 710, Cratin. fr. 149, *Pherecr.* fr. 113); **curdled beestings** (*pyriatê*: Cratin. fr. 149); **egg** (*ôon*: Ar. fr. 193, fr. 194, *Lys.* 856, *Av.* 673, *Call.Com.* I fr. 12, *Eup.* fr. 399, *Philyll.* fr. 24, *Polioch.* fr. 2, *Theopomp.Com.* fr. 10).

PROCESSED FOODS

Related occupations: dried-fig seller (*ischadopôlês*); salt-seller (*halopôlis*); gruel-seller (*lekithopôlês*); cook (*mageiros*); cook of fine foods (*opsopoios*); miller (*mylothros*); cheese-monger (*tyropôlês*); wheaten-groat seller (*chidropôlês*).

Fine wheaten flour (*semidalis*: Ar. fr. 428, *Stratt.* fr. 2, *Hermipp.* fr. 63 [from Syria]; *palêmation*: Ar. fr. 700); **wheat-meal** (*aleuron*: Ar. fr. 52); **wheaten groat** (*chidron*: Ar. *Eq.* 806); **fine white barley meal**: (*leukon alphon*: Ar. *Pl.* 807); **parched barley** (*kachrys*: Cratin. fr. 300); **barley meal** (*krimnon*: *Eup.* fr. 99 1.82); **peeled barley** (*ptisanê*: Ar. fr. 165, fr. 428, *Nicophon* fr. 6); **ear of corn** (*stachys*: Ar. *Eq.* 393); **groats of wheat or spelt** (*chondros*: Ar. fr. 208, fr. 428, *Hermipp.* fr. 63, *Pherecr.* fr. 113); **cheese** (*tyros*: Ar. *Eq.* 771, *Pax* 368, 1129, *Ran.* 559, *Vesp.* 676, 838, *Av.* 533, 1580, *Chionid.* fr. 7, Cratin. fr. 136, fr. 400, *Eup.* fr. 361, *Telecl.* fr. 27, *Pherecr.* fr. 50; *trophalis/trophalion*: *Eup.* fr. 299; **cheese from Syracuse**: *Hermipp.* fr. 63); **cheese made from milk curdled by fig juice** (*opias*: Ar. *Vesp.* 353); **vinegar** (*oxos*: Ar. fr. 158b, *Ach.* 35, *Ran.* 620, *Av.* 534, *Eup.* fr. 355, *Philonid.* fr. 6, *Theopomp.Com.* fr. 66; **vinegar from Sphettos**: Ar. *Pl.* 720); **brine and vinegar sauce** (*oxalmê*: Ar. *Vesp.* 331, Cratin. fr. 150); **brine and garlic sauce** (*skorodalmê*: Ar. *Eq.* 199, 1095, *Eccl.* 291, Cratin. fr. 150); **savoury paste** (*muttôtos*: Ar. *Ach.* 174, *Pax* 247, 273, *Eup.* fr. 191); **salt** (*hals*: Ar. fr. 158b, *Ach.* 521, 760, 814, 831, 1099 [‘thyme-salt’], Ar. *Nub.* 1237, *Eccl.* 814, *Alc.Com.* fr. 17, *Crates I* fr. 16, *Aristonym.* fr. 1); **honey-syrup** (*siraion meli*: Ar. *Vesp.* 878); **fish sauce** (*garos*: Cratin. fr. 312, *Pherecr.* fr. 188, *Pl.Com.* fr. 215); **omelet made with lillies** (*leiriopolphanemônê*: *Pherecr.* fr. 137); **snack wrapped in fig-leaf** (*thrion*: Ar. fr. 128b, *Ach.* 1102, *Eq.* 955); **salad paste** (*abyrtakê*: *Pherecr.* fr. 195); **Lydian-style blood sauce** (*karykê*: *Pherecr.* fr. 195); **sauce** (*hypotrimma*: Ar. fr. 128b, *Eccl.* 292, *Telecl.* fr. 1); **dried fruit** (*tragêma*: Ar. *Ach.* 1091, *Pl.* 190, 996, *Eccl.* 844, *Eup.* fr. 399, *Call.Com.* I fr. 12); **dried fig** (*trasia*: Ar. *Nub.* 50; *ischas*: Ar. fr. 681, *Eq.* 755, *Pax* 634, *Pl.* 192, 677, 801, 811, 1122, Cratin. fr. 390, *Eup.* fr. 404, *Hermipp.* fr. 63, *Pherecr.* fr. 74, *Stratt.* fr. 4, fr. 46); **Teithrasian ischades**: *Theopomp.Com.* fr. 12); **cake of dried fruit** (*palasion*: Ar. *Pax* 574); **raisin** (*ostaphis*: Cratin. fr. 131, *Hermipp.* fr. 63); **broth** (*zômos*: Ar. fr. 702, *Nub.* 386, 389, *Eq.* 357, 360, 1174, 1178, *Pax* 885, *Epil.* fr. 4, *Metag.* fr. 18, *Nicophon* fr. 21, *Telecl.* fr. 1, *Eup.* fr. 380; **black broth**: *Pherecr.* fr. 113); **gruel** (*atharê*: Ar. fr. 136, *Pl.* 673, 694, *Crates I* fr. 11, *Nicophon* fr. 6; *lekithos*: *Pherecr.* fr. 26, fr. 113; *pasta*: Ar. fr. 702); **starchy supplement** (*polphos*: Ar. fr. 701, *Metag.* fr. 18); **soup** (*zômeuma*: Ar. *Eq.* 279); **pea soup** (*etnos*: Ar. fr. 419, fr. 514, *Ach.* 246, *Ran.* 62, 506, *Av.* 78, *Eccl.* 845, *Call.Com.* I fr. 26, *Crates I* fr. 11, *Pherecr.* fr. 137; *pisinos*: Ar. *Eq.* 1171); **lentil soup** (*phakê*: Ar. fr. 23, fr. 164, fr. 165, fr. 405, *Eq.* 1007, *Pl.* 192, 1004, *Stratt.* fr. 47); **olive oil** (*elaios*: Ar. *Ach.* 35, 1128, *Nub.* 56, *Thesm.* 420, *Vesp.* 702, *Av.* 533, 1589, *Pl.* 810, Cratin. fr. 136, *Pl.Com.* fr. 206); **olive paste** (*stemphylitês*: Ar.

Eq. 806, *Nub.* 45, *Phryn.Com.* fr. 40); **salted olive** (*halmas*: *Ar.* fr. 148, fr. 408, *Eup.* fr. 275, *Hermipp.* fr. 75).

BAKED GOODS AND PASTRIES

Related occupations: honey-cake seller (*engkridopôlês*); baker (*artokopos/artopoios/sitopoios*); bread-seller (*artopôlês*); grain-dealer (*sitopôlês*).

Bread loaf (*artos*: *Ar.* fr. 111, fr. 164, fr. 173, *Nub.* 1383, *Eq.* 282, 778, *Pax* 120, 853, *Lys.* 1207, *Pl.* 191, 543, 1136, *Eccl.* 606, *Cratin.* fr. 176, fr. 484, *Epil.* fr. 4, *Nicophon* fr. 6, fr. 21, *Pherecr.* fr. 61, *Phryn.Com.* fr. 40, *Pl.Com.* fr. 78, *Telecl.* fr. 1, *Theopomp.Com.* fr. 9, *Pherecr.* fr. 61; **Cilician-style loaves**: *Pl.Com.* fr. 92); **Boeotian Roll or loaf** (*kollix*: *Ar.* *Ach.* 872, *Nicophon* fr. 6); **bread** (*apopyrias*: *Cratin.* fr. 106); **Egyptian-style sourdough loaf** (*kyllastis*: *Ar.* fr. 267); **pan-baked loaf** (*kribanôtos*: *Ar.* *Pl.* 765); **fine-meal cake** (*amylos*: *Ar.* fr. 405, *Ach.* 1092, *Pax* 1195, *Metag.* fr. 6, fr. 18, *Pherecr.* fr. 113, *Pl.Com.* fr. 188, *Stratt.* fr. 11, *Telecl.* fr. 34); **flat-cake** (*plakous*: *Ar.* fr. 211, *Ach.* 1092, 1125, 1127, *Eq.* 1190, 1191, 1219, *Pax* 869, 1359, *Ran.* 507, *Pl.* 192, 995, 1126, *Nicophon* fr. 6, fr. 21, *Pl.Com.* fr. 121, fr. 188, *Telecl.* fr. 1, fr. 34, *Theopomp.Com.* fr. 12); **honey-cake** (*melitoutta*: *Ar.* *Nub.* 507, *Nicophon* fr. 6); **barley-cake** (*maza*: *Ar.* fr. 640, *Eq.* 55, *Pax* 1, 3, 4, 565, 853, *Pl.* 192, 544, *Eccl.* 606, *Crates I* fr. 16, *Cratin.* fr. 176, *Eup.* fr. 269, *Metag.* fr. 6, *Nicophon* fr. 6, *Pherecr.* fr. 137, *Pl.Com.* fr. 32, *Polioch.* fr. 2, *Telecl.* fr. 1, fr. 40, *Theopomp.Com.* fr. 12; *Phryn.Com.* fr. 65; *bôlis*: *Ar.* fr. 799; *psaistos*: *Ar.* *Pl.* 138, 1115); **barley scone** (*maziskê*: *Ar.* *Eq.* 1105, 1166); **sesame cake** (*sêsamê*: *Ar.* *Pax* 869, *Eup.* fr. 176 *Thesm.* 570, *Vesp.* 676); **cake or roll** (*kollabos*: *Ar.* fr. 520, fr. 522, *Pax* 1196, *Ran.* 507, *Philyll.* fr. 4); **twice-cooked cake** (*dipyros*: *Alc.Com.* fr. 2); **pancake** (*tagénias*: *Magn.* fr. 2, *Metag.* fr. 6, *Nicophon* fr. 6, *Cratin.* fr. 130); **well-kneaded cake** (*nastos*: *Ar.* *Av.* 567, *Pl.* 1142, *Metag.* fr. 6, *Pherecr.* fr. 113, fr. 137); **spit-roasted cake** (*obelias*: *Ar.* fr. 105, *Nicophon* fr. 6, *Pherecr.* fr. 61; cf. *obolia*: *Ar.* fr. 456); **mold-formed cake** (*epichytos*: *Nicophon* fr. 6); **oil-and-honey cake** (*engkris*: *Ar.* fr. 269, *Pherecr.* fr. 99); **speckle-cake** (*epipaston*: *Ar.* *Eq.* 103, 1089, *Pherecr.* fr. 137); **milk-cake** (*amês*: *Ar.* *Pl.* 999; *amêtiskos*: *Telecl.* fr. 1); **sacrificial cake made with barley, wine and oil** (*thymelê*: *Pherecr.* fr. 247); **wine-cake** (*oinoutta*: *Ar.* *Pl.* 1121); **various kinds of cake** (*itrion*: *Ar.* *Ach.* 1092, *Archipp.* fr. 11; *pyramous*: *Ar.* *Eq.* 277; *elatêr*: *Ar.* *Eq.* 1183, *Call.Com.* I fr. 26; *popanon*: *Ar.* *Thesm.* 285, *Pl.* 660, 680, *Eccl.* 843; *barax*: *Epil.* fr. 4; *magides*: *Ar.* fr. 851; *phthois*: *Ar.* *Pl.* 677); **bun** (*kollyra*: *Ar.* fr. 429, *Pax* 123); **pastry** (*pemma*: *Call.Com.* I fr. 12, *Eup.* fr. 399); **light pastry** (*phystê*: *Chionid.* fr. 7).

WINE

Related occupations: dealer in sweet wine (*hêdyoinos*); wine-seller (*oinopôlês*).

Wine (*oinos*: *Ar.* fr. 219, fr. 351, fr. 364, fr. 365, fr. 613, fr. 614, *Nub.* 417, 1123, *Eq.* 85, 95, 102, 355, *Pax* 1323, *Thesm.* 420, *Vesp.* 676, *Pl.* 644, 737, 808, 1084, *Apolloph.* fr. 7, *Cratin.* fr. 199, fr. 299, fr. 462, *Diocl.Com.* fr. 7, *Eup.* fr. 128, *Hermipp.* fr. 24, fr. 38, *Lysipp.* fr. 1, *Metag.* fr. 18, *Nicophon* fr. 11, *Pherecr.* fr. 76, fr. 113, fr. 162, *Philyll.* fr. 5, *Phryn.Com.* fr. 15, *Pl.Com.* fr. 188, *Polioch.* fr. 2, *Stratt.* fr. 60, *Telecl.* fr. 1, fr. 27, *Theopomp.Com.* fr. 80; **homemade wine** (*autitês*): *Polyzel.* fr. 1, *Telecl.* fr. 10; **wine from Mende**: *Cratin.* fr. 195, *Hermipp.* fr. 77, *Philyll.* fr. 23; **wine from Chios**: *Ar.* fr. 334, fr. 546, *Eccl.* 1139,

Epil. fr. 7, Hermipp. fr. 77, Philyll. fr. 23; **wine from Thasos**: Ar. fr. 334, fr. 364, *Pl.* 1021, *Ecl.* 1119, Epil. fr. 7, Hermipp. fr. 77, Philyll. fr. 23; **wine from Naxos**: Eup. fr. 271; **wine from Lesbos**: Philyll. fr. 23; **wine from Skiathos**: Stratt. fr. 64; **wine from Peparethos**: Ar. fr. 334; **Byblian wine**: Philyll. fr. 23; **Pramnian wine**: Ar. fr. 334, fr. 688, Phryn.Com. fr. 68).

FRUITS DE MER, FRESHWATER FISH AND MARITIME PRODUCTS

Related occupations: fisherman (*halieus*); fishmonger (*ichthyopólês*); sardine-seller (*membradopólês*); salt-fish seller (*tarichopólês*).

Small fish (*anthrakides*: Philyll. fr. 12; *epanthrakides*: Ar. *Ach.* 670); **anchovy or small fish** (*trichis*: Ar. fr. 426, *Ach.* 551, *Eq.* 662, Eup. fr. 156, Nichoch. fr. 14); **sprat** (*membras / bembras*: Ar. *Vesp.* 493, Aristomen. fr. 7, Aristonym. fr. 2, Phryn.Com. fr. 52, Pl.Com. fr. 131; *mainê*: Philyll. fr. 26; *mainidion*: Ar. fr. 258, Pherecr. fr. 62); **white sprat** (*leukomainis*: Polioch. fr. 1); **sphyraina** (*sphyraina*: Stratt. fr. 29 = *kestra*); **Phaleric sprat** (*phalerikos*: Ar. fr. 520, *Ach.* 901); **salt-fish** (*tarichos*: Ar. fr. 207, fr. 347, fr. 405, fr. 639, *Ach.* 967, 1101, *Eq.* 1246, *Pax* 563, *Ran.* 557, *Vesp.* 491, Chionid. fr. 5, fr. 6, Hermipp. fr. 10, Pherecr. fr. 190, Pl.Com. fr. 49, fr. 211, Crates I fr. 19; *tarichion*: Ar. *Pax.* 563, Cephisod. fr. 8, Pherecr. fr. 26; **tarichos from the Black Sea**: Cratin. fr. 44; **tarichos from Phrygia**: Eup. fr. 199; **tarichos from Gadeira [Cadiz]**: Eup. fr. 199; **tarichos from the Hellespont**: Hermipp. fr. 63); **pilchard** (*aphyê*: Ar. fr. 520, *Eq.* 645, 649, 666, 672, *Av.* 76 [from Phalerum], Aristonym. fr. 2, Call.Com. I fr. 10, Metag. fr. 6, Pherecr. fr. 109); **sea perch** (*orphôs*: Amips. fr. 8, Archipp. fr. 17, Cratin. fr. 154, fr. 171, Pl.Com. fr. 57, fr. 189; **sea perch from Anagyris**: Pl.Com. fr. 175; *orphôs* = *acharnôs*: Call. Com. I fr. 6); **perch** (*perkê*: Philyll. fr. 12); **tilapia** (*korakinos*: Ar. *Lys.* 560, Philyll. fr. 12, fr. 26; *saperdis*: Ar. fr. 430); **sea bream** (*phagros*: Amips. fr. 8, Eup. fr. 42, Metag. fr. 6, Pl.Com. fr. 57, Stratt. fr. 26, fr. 45; *synodous*: Pl.Com. fr. 189); **tunny** (*thynnos*: Ar. fr. 380, fr. 430, *Eq.* 312, 354, Call.Com. I fr. 6, Cratin. fr. 171, Eup. fr. 159, Pl.Com. fr. 189, Stratt. fr. 5, fr. 32; **tunny from Sicily**: Theopomp.Com. fr. 52; **young tunny** [*prêm-nas*]: Nichoch. fr. 14, Pl.Com. fr. 44; [*auxis*]: Phryn.Com. fr. 59; [*thynnîs*]: Stratt. Fr. 13); **sea bass** (*labrax*: Ar. fr. 380, fr. 612, *Eq.* 361, Archipp. fr. 23, Eup. fr. 160, Nicophon fr. 14); **mackerel** (*skombros*: Ar. fr. 189, fr. 430, *Eq.* 1008, Philyll. fr. 26; *coly-mackerel* (*kolias*: Ar. fr. 430; **mackerel from the Hellespont**: Hermipp. fr. 63); **grey mullet** (*kestreus*: Ar. fr. 159, Amips. fr. 1, Archipp. fr. 12; *lineus*: Call.Com. I fr. 6, Diocl.Com. fr. 6, Nicophon fr. 14, Philyll. fr. 12, Theopomp.Com. fr. 14; *nêstis*: Ar. fr. 333); **red mullet** (*triglê*: Cratin. fr. 62, fr. 358, [from the deme Aixone: fr. 236], Philyll. fr. 12, Pl.Com. fr. 189); **grunt fish** (*boax*: Ar. fr. 491, Archipp. fr. 16, Pherecr. fr. 117, Pl.Com. fr. 44, Polioch. fr. 1); **monkfish** (*rhinê*: Archipp. fr. 23); *maiôtes* (a fish caught in the Black Sea]: Archipp. fr. 26); **perch** (*saperdês*: Ar. fr. 708, Archipp. fr. 26); **sheat fish** (*glanis*: Archipp. fr. 26); **grey-fish** (*glaukos*: Ar. fr. 380, Cratin. fr. 171, fr. 336, Sannyr. fr. 3); **dogfish** (*kuôn*: Cratin. fr. 171; *galeos*: Ar. fr. 333, Archipp. fr. 15, fr. 23, Philyll. fr. 1, Pl.Com. fr. 146); **blacktail** (*melanouros*: Cratin. fr. 236); **gold-heads** (*chrysophrys*: Eup. fr. 160); **little crow-fish** (*korakînidion*: Pherecr. fr. 62); **sargue** (*sargos*: Philyll. fr. 12); **speckled fish** (*aiolias*: Pl.Com. fr. 189); **scorpion fish** (*skorpis*: Pl.Com. fr. 189); **lebias** (*lebias*: Ar. fr. 430); *myllos* (*myllos*: Ar. fr. 430); **flatfish** (*kitharos*: Call.Com. I fr. 6, Pherecr. fr. 43; *escharos*: Archipp. fr. 24); **skate or ray** (*leiobatos*: Pl.Com. fr. 146; *batis*: Ar. fr. 333, Call.Com. I fr. 6, Eup. fr. 174, Hermipp. fr. 46, Metag. fr. 6, Philonid. fr. 2, Pl.Com.

fr. 166, Sannyr. fr. 3; *selachos*: Amips. fr. 8); **stingray** (*trugôn*: Cratin. fr. 236; *narkê*: Pl. Com. fr. 164); **shark** (*karchareos*: Pl. Com. fr. 189; *selachion*: Pl. Com. fr. 57); **sea urchin** (*echinos*: Ar. *Ach.* 879, Archipp. fr. 24); **turbot** (*psêtta*: Ar. *Lys.* 115, 131, Pl. Com. fr. 114); **limpet** (*lepas*: Archipp. fr. 24, Philyll. fr. 12); **clam** (*chêmé*: Philyll. fr. 12); **razor-clam** (*sôlên*: Philyll. fr. 12; *pinê*: Philyll. fr. 12); **scallop** (*kteis*: Archipp. fr. 24; **scallops from Mytilene**: Philyll. fr. 12); **whelk** (*kéryx*: Archipp. fr. 25); **mussel** (*pinê*: Cratin. fr. 8; *mûs*: Philyll. fr. 12; *konché*: Ar. fr. 67, Telecl. fr. 20); **oyster** (*ostreion*: Cratin. fr. 8, Philyll. fr. 12); **crab** (*karkinos*: Aristonym. fr. 2); **crayfish** (*karabos*: Ar. fr. 164, fr. 333, fr. 380, fr. 640, Call. Com. I fr. 6, Eup. fr. 174, Metag. fr. 6, Philyll. fr. 12, Pl. Com. fr. 102); **prawn** (*karis*: Ar. fr. 333, Cratin. fr. 314, Eup. fr. 2, fr. 120), **lobster** (*astakos*: Philyll. fr. 12); **eel** (*engchelys*: Ar. fr. 229, fr. 333, *Nub.* 559, *Eq.* 864, *Vesp.* 510, Call. Com. I fr. 6, Cratin. fr. 171, Eup. fr. 368, Pherecr. fr. 50, fr. 113, Pl. Com. fr. 146, Stratt. fr. 40; **Copaic eel**: Ar. fr. 380, *Ach.* 880, 882, 889, 962, 963, 1043, *Pax* 1005, *Lys.* 36, 702, Stratt. fr. 45); **moray eel** (*smyraina/myraina*: Pl. Com. fr. 166); **octopus** (*polypous*: Ar. fr. 195, fr. 196, fr. 197, fr. 333, Amips. fr. 6, Eup. fr. 117, Hegem. fr. 1; *oktôpous*: Cratin. fr. 80, Philyll. fr. 12, Pl. Com. fr. 100, fr. 189, Theopomp. Com. fr. 6); **squid** (*teuthis*: Ar. fr. 333, *Ach.* 1156, *Eq.* 929, Metag. fr. 6, Pherecr. fr. 50, fr. 137); **cuttlefish** (*sêpia*: Ar. fr. 195, fr. 258, fr. 333, *Ach.* 351, 1040, *Ecl.* 127, 554, Eup. fr. 338, Philyll. fr. 12, Stratt. fr. 49, Theopomp. Com. fr. 6); **‘stinker’ – a kind of octopus or squid** (*ozaina/osmylê*: Ar. fr. 258); **boiled fish** (*hepsêtoi*: Ar. fr. 56, fr. 292, *Vesp.* 679, Eup. fr. 5, fr. 16, Nicophon fr. 9); **fish slice** (*temachos*: Ar. *Ach.* 1100, *Eq.* 283, 1177, *Pl.* 894, *Ecl.* 606, 842, Cratin. fr. 154, Metag. fr. 6, Pherecr. fr. 50, fr. 113, Phryn. Com. fr. 59, Stratt. fr. 45); **sponge** (*sponggos*: Ar. fr. 59, *Ach.* 463, *Ran.* 482, 487, Crates I fr. 17, Pherecr. fr. 58, Theopomp. Com. fr. 41); **murex** (*porphyra*: Archipp. fr. 25); **water-snake** (*enudris*: Ar. *Ach.* 880).

ANIMAL MEAT

Related occupations: sausage-maker/seller (*allantopoios/allantopôlês*); quail-catcher (*ortygothêras*); quail-rearer (*ortygotrophos*); fowler/ bird-catcher (*ornitheutês*); butcher (*kreopôlês*).

Meat (*kreas*: Ar. fr. 25, fr. 128b, fr. 606, fr. 640, *Eq.* 282, 420, 421, 428, 484, *Pax* 192, 378, 717, 1282, *Thesm.* 558, *Av.* 1583, *Pl.* 320, 894, Cephisod. fr. 8, Crates I fr. 19, Metag. fr. 6, Nicophon fr. 21, Telecl. fr. 1, Pherecr. fr. 50, fr. 87 [beef]; *kreadion*: Ar. *Pl.* 227); **beef** (*bous*: Pherecr. fr. 133); **bull** (*tauros*: Archipp. fr. 10, Theopomp. Com. fr. 74); **rib of beef** (*schelis*: Ar. fr. 264, *Eq.* 362, Hermipp. fr. 63 [from Italy]); **pig/boar** (*hys*: Ar. *Pax* 927, *Pl.* 820, 1106, Pl. Com. fr. 27; *kapros*: Archipp. fr. 10, Stratt. fr. 12; *kapridion*: Ar. fr. 520; **boar’s liver** (*hêpar kaprou*: Ar. fr. 333); **pig trotters**: Ar. fr. 4, fr. 164, Archipp. fr. 10, Ecphantid. fr. 1, Pherecr. fr. 50, Stratt. fr. 5, Telecl. 51; **pigs imported from Syracuse**: Hermipp. fr. 63); **side of pork** (*pleuron hueion*: Hermipp. fr. 46); **pork belly** (*êtriaion delphakos*: Ar. fr. 333, fr. 520); **pig-snout** (*rhyngchos*: Ar. fr. 478); **mutton/lamb** (*arneios*: Ar. fr. 449, Pherecr. fr. 50, Crates I fr. 1; *amnos*: Autocr. fr. 3); **mincemeat** (*perikomma*: Metag. fr. 6); **liver** (*hêpar*: Pherecr. fr. 50; *hêpation*: Ar. fr. 520); **ribs** (*pleura*: Ar. fr. 520, Pherecr. fr. 50); **ham on the bone** (*kolê*: Ar. *Pl.* 1128, Pl. Com. fr. 17); **tongue** (*glôtta*: Ar. fr. 520); **spleen** (*splên*: Ar. fr. 520); **foetal meat** (*embryeion*: Ar. fr. 581); **salted meat** (*halipastos*: Aristomen. fr. 6, fr. 12); **tripe or sausage** (*chordê*: Ar. fr. 702, *Ach.* 1041, Cratin. fr. 205, Pherecr. fr. 137; *cholix*: Ar. fr. 83, fr. 702, *Ran.* 576, *Pax* 717; *nêstis*: Ar. fr. 520); **haggis** (*gastêr*: Ar. *Nub.* 409; *choria*: Ar. fr. 333, fr. 581); **black pudding** (*physkê*: Ar. fr. 264,

fr. 702, Cratin. fr. 175, Pherecr. fr. 50, fr. 113, Pl.Com. fr. 17); **sausage** (*allas*: Ar. Eq. 143, 144, 148, 179, 161, 201, 208, 432, 1242, 1246, Crates I fr. 19, Metag. fr. 6, Nicophon fr. 22; *takôn*: Crates I fr. 19, Pherecr. fr. 113); **bird meat** (*ornis*: Pherecr. fr. 50); **duck** (*nêtta*: Ar. Ach. 875, Pax 1004); **jackdaw** (*koloios*: Ar. Ach. 875, Av. 18); **francolin** (*attagas*: Ar. fr. 448, Ach. 875); **coot** (*phalaris*: Ar. Ach. 875); **purple coot** (*porphyryon*: Ar. Av. 707); **wren or plover** (*trochilos*: Ar. Ach. 876, Pax 1004); **'diver' bird** (*kolymbos*: Ar. Ach. 876); **goose** (*khan* or *khên*: Ar. Ach. 878, Pax 1004, Av. 707, Cratin. fr. 249, Theopomp.Com. fr. 14); **marten** (*iktis*: Ar. Ach. 880); **thrush** (*kichlê*: Ar. fr. 402, fr. 581, Ach. 961, 1007, 1104, 1108, 1116, Pax 531, 1149, 1195, Av. 1080, Pherecr. fr. 113, fr. 137, Pl.Com. fr. 188, Telecl. fr. 1); **dove** (*phatta*: Ar. Ach. 1104, 1106, Pax 1004); **chaffinch** (*spinus*: Ar. fr. 539, Pax 1149, Av. 1079; *spiza*: Ar. fr. 402, Av. 1079, Pax 1149); **quail** (*ortyx*: Ar. Av. 707, Eup. fr. 226, fr. 269); **partridge** (*perdix*: Ar. fr. 512, Av. 767, Nicophon fr. 9, Pherecr. fr. 160); **blackbird** (*kossyphos*/*kopsichos*: Ar. Av. 806); **swallow** (*chelidôn*: Ar. fr. 581); **hare/rabbit** (*lagôs*, *lagôdion*: Ar. fr. 218, fr. 263, Ach. 520, 878, 1006, 1110, Eq. 1192, 1199, Pax 1150, 1196, Ecl. 843, Eup. fr. 174, Pherecr. fr. 189; *dasypros*: Alc.Com. fr. 17, Pl.Com. fr. 188, Telecl. fr. 34); **jugged-hare** (*mimarkus*: Ar. Ach. 1112); **fox** (*alôpêx*: Ar. Ach. 878); **mole rat** (*skalops*: Ar. Ach. 879); **cat** (*ailouros*: Ar. Ach. 879); **badger** (*pyktis*: Ar. Ach. 879); **grasshopper** (*akris*: Ar. Ach. 1116); **cicada** (*tettix*: Ar. fr. 581); **snail** (*kochlias*: Polioch. fr. 2, Philyll. fr. 26).

LIVESTOCK, DRAUGHT ANIMALS AND PETS

Related occupations: sheep-dealer (*probatopôlês/probatokapêlos*); goatherd (*aipolos*); cowherd (*boukolos/bouphorbos*); ass-keeper (*onokomos*); ass-driver (*onelatês*); muleteer (*oreokomos*); shepherd (*poimên*); horse-breaker (*pôlodamnês*); swineherd (*sybôtês*); pig-dealer (*choiopôlês*).

Goat (*aix*: Ar. Nub. 71, Cratin. fr. 261; *tragos*: Ar. Av. 959, Pl. 820, Eup. fr. 3, fr. 19, Pherecr. fr. 30); **ram** (*krios*: Ar. Av. 568, Pl. 820); **sheep** (*probation*: Ar. fr. 402, Nub. 45, 1203, Eq. 132, Pax 1022, Av. 583, 856, Pl. 298, Eup. fr. 163); **pig** (*delphax*: Pl.Com. fr. 118, fr. 119, Cratin. fr. 4, Theopomp.Com. fr. 49); **suckling pig** (*choiros*: Ar. Ach. 764, 767, 768, 769, 771, 773, 781, 782, 793, 794, 795; *choirion/choiridion*: Ach. 521, 740, 749, 777, 806, 808, 812, 819, 830, 834, Pax 374, 386, Stratt. fr. 61; *delphakion*: Ar. fr. 236, Thesm. 237, Lys. 1061, Cratin. fr. 4, fr. 155, Pherecr. fr. 113, Crates I fr. 1, Eup. fr. 301; *galathênos*: Pherecr. fr. 33, fr. 49); **sow** (*kapraina*: Hermipp. fr. 9; *delphax*: Nichoch. fr. 22); **ox** (*bous*: Ar. fr. 111, fr. 402, fr. 591, Ach. 1022, 1031, Eq. 356, 656, 659, Pax 925, 926, 1280, 1282, Pl. 138, Cratin. fr. 23, fr. 34, Eup. fr. 56, fr. 163, fr. 259 l.49, Hermipp. fr. 36, Stratt. fr. 72); **little ox** (*boidarion*: Ar. fr. 83, Av. 585); **bee** (*melitta*: Crates I fr. 38); **donkey** (*onos*: Ar. fr. 144, 199, Vesp. 170, Av. 721, Cephisod. fr. 1, Crates I fr. 38, Cratin. fr. 56, fr. 247, Hermipp. fr. 7, Pherecr. fr. 16, Pl.Com. fr. 65); **horse** (*hippos*: Ar. Nub. 16, 27, 125, 438, 1223, 1224, 1272, 1407, Eq. 552, 595, Lys. 193, 561, Av. 1128, Pl. 157, Crates I fr. 33, Eup. fr. 246; *colt* [*pôlos*]: Cratin. fr. 94, Stratt. fr. 55); **racehorse** (*kelês*: Eup. fr. 164); **Thessalian horse with an ox-shaped mark** (*boukephalos*: Ar. fr. 42, 43); **horse with a qoppa brand** (*koppatias*: Ar. fr. 43, Nub. 23); **horse with a san brand** (*samphoras*: Ar. Eq. 603, Nub. 122, 1298); **pet dog** (*kyôn*: Ar. Pl. 157, 1105, Cratin. fr. 249, Lysipp. fr. 9; *kynarion*: Theopomp.Com. fr. 93; **dog from Dodona**: Cratin. fr. 5); **pet puppy** (*skylax*: Ar. fr. 209); **carrier pigeon** (*peristera*: Pherecr. fr. 38; used as bait: Ar. Av. 1082); **small pigeon** (*peristerion*: Phryn. Com. fr. 53); **fighting cock or cockerel** (*alektôr*: Phryn.Com. fr. 43, Pl.Com. fr. 191,

fr. 231, Stratt. fr. 49); **hen** (*alektryon*: Ar. fr. 17, fr. 193, fr. 194, *Nub.* 633, 666, Stratt. fr. 61, Theopomp.Com. fr. 10).

FUEL AND RAW MATERIALS

Related occupations: woodcutter (*hylotomos*); wood-transporter (*hylophoros*); oakum-seller (*styppeiopôlês*); carriers of clay (*hoi pelophorountes*).

Charcoal (*anthrax*: Ar. fr. 67, 138, *Ach.* 34, 214, 348, 891, Ar. *Nub.* 97, *Pax* 440, *Av.* 1580); **pitch** (*pitta*: Ar. fr. 638 [from Brettus in Itlay], *Ach.* 190, *Ran.* 364, Cratin. fr. 201); **oakum/ flax** (*styppeion*: Ar. *Eq.* 129); **timber** (*hylê/xylê*: Ar. fr. 417, fr. 610, *Ach.* 273, Ar. *Vesp.* 301, Phryn.Com. fr. 11); **boxwood** (*pyxos*: Cratin. fr. 50, Eup. fr. 253); **pine** (*peukê*: Ar. *Eq.* 1310); **cypress from Crete** (*kyparittos*: Hermipp. fr. 63); **putty/ mortar** (*pêlos*: Ar. *Av.* 1143, Eup. fr. 266); **potter's clay** (*keramikên gaian*: Sannyr. fr. 4); **fuller's earth** (*Kimolias gês*: Ar. *Ran.* 713, Cephisod. fr. 6, Eup. fr. 412 [*gên smêktrida*]); **blue dye** (*kyanos*: Polyzel. fr. 4); **ruddle** (*miltos*: Ar. *Ecl.* 378, Diocl.Com. fr. 10); **cinnabar** (*tinggabari*: Diocl.Com. fr. 10); **ivory** (*elephas*: Hermipp. fr. 63); **gold** (*chrysos*: Ar. fr. 366).

CERAMIC GOODS

Related occupations: potter (*kerameus*); lamp-maker (*lychnopoios*); lamp-seller (*lychnopôlês*); brick-carrier (*plinthophoros*); bricks made in a brickyard (*plintheion*): Ar. *Frag.* 293; brick-maker (*plinthourgos*); Funeral-urn maker (*soropoios*).

Pot (*chytra*: Ar. fr. 606, fr. 693, *Ach.* 284, *Eq.* 745, 1174, 1176, *Pax* 923, 924, *Lys.* 557, *Thesm.* 505, 509, *Ran.* 983, *Vesp.* 828, 910, 913, 955, *Av.* 43, 78, 358, 365, 386, 391, *Pl.* 673, 686, 812, 1197, 1203, 1205, 1207, *Ecl.* 734, 845, 1092, Alc.Com. fr. 24, Crates I fr. 16, fr. 47, Diocl. Com. fr. 9, Eunic. fr. 1, Eup. fr. 218, Polyzel. fr. 6, Pherecr. fr. 281); **small pot** (*chutridion*: Ar. *Ach.* 463, 1175, *Pax* 202); **pot** (*keramos*: Ar. *Ach.* 901, 928); **small pot** (*keramion*: Cratin. fr. 391); **three-legged pot** (*kakkabê*: Ar. fr. 224, fr. 495); **jar** (*kados*: Ar. fr. 280, *Ach.* 549, *Pax* 1202, *Ecl.* 1002, 1004, Pherecr. fr. 81, fr. 194; *kadiskos*: Ar. fr. 598, *Av.* 1032, Cratin. fr. 199, fr. 206, Phryn.Com. fr. 33); **wine jar** (*stamnos*: Ar. fr. 546, *Pl.* 545, Hermipp. fr. 77, Pl.Com. fr. 205; *stamnion*: Ar. *Lys.* 196, 199); **jar** (*dinos*: Stratt. fr. 35); **jar** (*hyrchê*: Ar. fr. 435, *Vesp.* 676); **vinegar jar** (*oxis*: Ar. fr. 709, cf. fr. 743, *Pl.* 812); **oil jar** (*phrear*: Ar. *Pl.* 810); **pot** (*teuchos*: Pherecr. fr. 83); **amphora** (*amphora*: Ar. fr. 310, fr. 661, *Nub.* 1203, *Pax* 202, *Pl.* 808, Eup. fr. 200, Philyll. fr. 6, Telecl. fr. 21); **storage jar** (*pithos*: Ar. fr. 485, *Pax* 613, 703, Eup. fr. 122, Pherecr. fr. 147; *pithaknê*: Ar. *Eq.* 792); **clay storage container** (*kypselê*: Ar. *Pax* 631, Eup. fr. 227); **wine jug** (*oinochoê*: Eup. fr. 395); **wine drawer** (*oinêrysis*: Ar. *Ach.* 1067); **wine strainer** (*hêthmos*: Pherecr. fr. 45; *êthmos*: Cratin. fr. 140); **wine cooler** (*psyktêr*: Stratt. fr. 62); **water jar** (*kalpis*: Ar. *Lys.* 358, 400, 539; *hydria*: Ar. fr. 139, *Vesp.* 926, *Av.* 602, *Ecl.* 678, 738, Diocl.Com. fr. 1, Eup. fr. 218); **ewer** (*prochoidion*: Cratin. fr. 206, Stratt. fr. 23); **basin** (*lekanê*: Ar. fr. 383, fr. 402, fr. 843, *Av.* 840, 1143, 1146, Cratin. fr. 271, Polyzel. fr. 4, Stratt. fr. 65, Theopomp.Com. fr. 41); **basin for meat** (*lekanion*, *lekanis*: Ar. fr. 843b, Theopomp.Com. fr. 83 [poultry]); **hand-washing basin** (*cheironipton*: Eup. fr. 129, 169); **crater** (*kratêr*: Ar. *Ecl.* 677, 841, Eup. fr. 218); **bowl** (*tryblion*: Ar. fr. 136, *Eq.* 650, *Av.* 77, 361, 387, *Ecl.* 847, Eup. fr. 218, Crates I fr. 11); **cup** (*kotylê*: Ar. fr. 68, fr. 364, Hermipp. fr. 29, Pl.Com. fr. 46, Stratt. fr. 62;

kotyliskos = *plêmochoê*: Ar. fr. 395a); **small cup** (*kotyliskion*: Ar. *Ach.* 458, *Pherecr.* fr. 75, *Stratt.* fr. 23); **cup** (*kylix*: Ar. fr. 17, *Ach.* 938, *Lys.* 195, 199, 203, 235, 236, 841, *Crates I* fr. 16, *Cratin.* fr. 252, *Pherecr.* fr. 45, fr. 73, fr. 152, *Phryn.Com.* fr. 42, *Pl.Com.* fr. 205; **Chian cup**: *Hermipp.* fr. 55, *Pherecr.* fr. 207); **cup** (*aleison*: Ar. fr. 634; *potêrion*: Ar. *Eq.* 120, 123, 124, 237, 1289, *Pherecr.* fr. 152; *kantharos*: *Phryn.Com.* fr. 15); **large Thracian-style cup** (*amystis*: Ar. *Ach.* 1229, *Amips.* fr. 21; *phthois*: *Eup.* fr. 382; *karchêsion*: *Cratin.* fr. 40); **limpet-cup** (*lepastê*: Ar. fr. 174, *Pax.* 916; *Hermipp.* fr. 45, *Philyll.* fr. 5, *Telecl.* fr. 27, *Theopomp.Com.* fr. 31, fr. 41, fr. 42); **small cup** (*kymbeion*: *Pherecr.* fr. 72, *Theopomp.Com.* fr. 32); **small cup for sampling** (*geustêrion*: Ar. fr. 310, *Pherecr.* fr. 152); **flat cup** (*petachnon*: Ar. fr. 301a-b); **beaker** (*ekpôma*: Ar. fr. 75, *Vesp.* 677, *Eccl.* 447); **frying pan** (*tagênon/têganon*: Ar. *Eq.* 929, *Eup.* fr. 374, *Pherecr.* fr. 109, fr. 128, fr. 133, *Phryn.Com.* fr. 60, *Pl.Com.* fr. 189, *Telecl.* fr. 11; *Philonid.* fr. 2); **roasting pan** (*phrygeus*: *Theopomp.Com.* fr. 54; *phrygetron*: *Polyzel.* fr. 6); **bread pan** (*kribanon*: *Pherecr.* fr. 180); **stove-lid** (*pnigeus*: Ar. fr. 64, *Nub.* 96); **lamp** (*lychnos*: Ar. *Nub.* 18, 56, 57, *Eq.* 1315, *Vesp.* 255, 262, *Av.* 1484, *Pl.* 668; *Cratin.* fr. 209, *Nicophon* fr. 15, *Pherecr.* fr. 44, *Phryn.Com.* fr. 25, *Pl.Com.* fr. 90, fr. 188, *Philonid.* fr. 3, *Eup.* fr. 218, *Hermipp.* fr. 26; *stilbê*: Ar. fr. 573, *Pl.Com.* fr. 206, *Hermipp.* fr. 26; **small lamp** [*lychnidion*]: Ar. fr. 13, fr. 291, *Crates I* fr. 3, *Hermipp.* fr. 62); **perfume bottle** (*aryballos*: Ar. *Eq.* 1094, *Theopomp.Com.* fr. 87; *alabastos*: Ar. fr. 561, *Ach.* 1053, *Lys.* 947); **flask** (*lêkythos*: Ar. fr. 210, fr. 214, fr. 487, *Thesm.* 139, *Av.* 1589, *Pl.* 810, *Eccl.* 538, 744, 996, 1032, 1101, 1111, *Theopomp.Com.* fr. 54); **small flask** (*lêkythion*: Ar. *Ran.* 1201); **flask with a plaited cover** (*pytinê*: Ar. *Av.* 798); **dish** (*lopas*: Ar. fr. 56, fr. 292, *Eq.* 1034, *Pl.* 812, *Vesp.* 511, *Eup.* fr. 5); **vessel** (*skeuos*: Ar. *Thesm.* 402); **small vessel or utensil** (*skeuarion*: Ar. *Thesm.* 738, *Pl.* 809, 1139, *Ach.* 451, *Ran.* 172); **small bowl** (*skaphion*: Ar. *Thesm.* 633, *Eup.* fr. 53); **dish** (*phialê*: Ar. *Pax* 431, *Vesp.* 677, 1446, *Av.* 975, *Cratin.* fr. 54, *Theopomp.Com.* fr. 4); **vinegar-saucer** (*oxybaphon*: Ar. fr. 75, *Av.* 361; *Cratin.* fr. 199, *Phryn.Com.* fr. 35); **chamber pot** (*amis*: Ar. fr. 653, *Thesm.* 633, *Ran.* 544a, *Vesp.* 935, *Eup.* fr. 52, fr. 385; *lasana*: Ar. fr. 477, *Eup.* fr. 240, *Pherecr.* fr. 93, *Pl.Com.* fr. 124; *skôramis*: Ar. *Eccl.* 371); **bath tub** (*asaminthos*: *Cratin.* fr. 252; *pyelos*: Ar. fr. 6, fr. 376, *Eq.* 1060, *Pax* 843, *Eup.* fr. 272); **footbath** (*podaniptêr*: Ar. fr. 319); **salt-cellar** (*halia*: *Stratt.* fr. 15); **brick** (*plinthos*: Ar. fr. 293, *Pax* 100, *Ran.* 621, *Av.* 552); **roof-tile** (*keramos*: Ar. *Nub.* 1127, *Pherecr.* fr. 137); **canteen** (*kôthôn*: Ar. *Eq.* 600, *Theopomp.Com.* fr. 55); **funerary urn** (*soros*: Ar. *Ach.* 691, *Lys.* 600; *lênos*: *Pherecr.* fr. 5); **water-clock** (*klepsydra*: Ar. *Ach.* 692, *Vesp.* 857, 858).

STONEWORK

Related occupations: stone-worker (*lithourgos*); millstone-cutter (*mylokopos*).

Altar (*bômos*: Ar. fr. 256, fr. 382, *Ach.* 308, *Pax* 938, 942, 957, 1020, *Lys.* 1140, *Thesm.* 695); **boundary-stone** (*horos*: Ar. *Ach.* 719); **stone slab** (*stêlê*: Ar. *Ach.* 727, *Lys.* 513); **small herm** (*hermidion*: Ar. *Pax* 924); **stone trough** (*holmos*: Ar. *Vesp.* 201, 238); **mill stone** (*mylos*: *Pherecr.* fr. 10).

MISCELLANEOUS WOODWORK

Related occupations: sawyer (*pristês*); lathe-turner (*torneutês*); carpenter (*xylourgos*); door-maker (*thyropoios*).

Phallus-pole (*phallos*: Ar. *Ach.* 243, 260); **walking stick** (*sképtron*: Cratin. fr. 133; *skipôn*: Cratin. fr. 257; *baktêria*: Ar. fr. 141, fr. 142 [Persian walking stick], *Pl.* 272, *Eccl.* 509, 543, 546, *Vesp.* 33); **short staff** (*skytalion*: Nicophon fr. 2); **farmer's stick** (*kampylê*: Ar. fr. 142); **small pole** (*kontilos*: Eup. fr. 364); **reed fishing rod** (*kalamos*: Pl.Com. fr. 11); **baggage-pole or carrying-yoke** (*skeuophorion*: Ar. fr. 886, Pl.Com. fr. 50); **wand** (*thyrsos*: Cratin. fr. 40); **block-and-tackle** (*trochileia*: Ar. *Lys.* 722); **block/pulley** (*trochileion*: Archipp. fr. 35); **windlass-roller for well** (*trochilia*: Ar. fr. 442, *Lys.* 772); **chopping-block** (*epixênon*: Ar. *Ach.* 318, 355, 359, 366); **shield-stand** (*killibas*: Ar. *Ach.* 1122); **ladder** (*klimax*: Ar. fr. 288, *Nub.* 1486, *Pax* 69); **broom** (*korêma*: Ar. *Pax* 56, Eup. fr. 167, fr. 218); **mill broom** (*mulêkoron*: Archipp. fr. 22); **cubit-rule** (*pêchys*: Ar. *Ran.* 799); **ruler** (*kanôn*: Ar. *Ran.* 799); **frame for moulding bricks** (*plasion*: Ar. *Ran.* 800); **loom** (*antion*: Ar. *Thesm.* 822); **shuttle** (*kerkis*: *Ran.* 1316, *Av.* 831); **loom beam** (*histos*: Nicophon fr. 13, *Philyll.* fr. 11; **vertical loom beams** [*keleontes*: Ar. fr. 835]); **curry-comb for horses** (*psêktra*: Ar. fr. 66); **figwood dog-collar** (*klôdos*: Ar. *Vesp.* 897); **door** (*thyra*: Ar. fr. 262, fr. 379, fr. 685, fr. 737, *Ach.* 127, 403, 864, 988, 1189, *Nub.* 132, 133, 509, *Pax* 1023, *Lys.* 161, 309, 1070, 1216, *Thesm.* 481, *Av.* 129, *Eccl.* 361, 977, 990, 1033, 1114, *Amips.* fr. 25, Eup. fr. 286, *Pherecr.* fr. 91, Pl.Com. fr. 193); **door-bar** (*kleithron*: Ar. *Lys.* 264; *mochlos*: Ar. *Thesm.* 415); **roof-beam** (*dokos*: Ar. *Nub.* 1496); **roof panel** (*kalathiskos*: Ar. *Thesm.* 822); **small board** (*sanidion*: Ar. *Pax* 202); **wooden fish plate** (*pinakiskos*: Ar. fr. 547, *Pl.* 813); **wooden image of a god** (*bretas*: Ar. *Eq.* 31, 32, *Lys.* 262); **statue** (*agalma*: Ar. *Thesm.* 773, *Theopomp.Com.* fr. 48); **game board** (*pessos*: Ar. *Eccl.* 987, Cratin. fr. 7); **reed skewer** (*schoinos*: Pl.Com. fr. 225); **stage-machine/ crane** (*mêchanê*: Ar. *Pax* 307).

VEHICLES AND VEHICLE COMPONENTS

Related occupations: wheelwright (*trochopoios*); cartwright (*hamaxourgos*); shipwright (*naupêgos*).

Cart (*hamaxa*: Ar. *Eq.* 464, *Pl.* 1014 [fancy carriage], *Canthar.* fr. 8, *Polyzel.* fr. 7); **mule-drawn cart** (*apênê*: *Philonid.* T 1); **racing chariot** (*harma*: Ar. *Eq.* 968, *Pax* 901, *Vesp.* 1427); **chariot board** (*diphriskos*: Ar. *Nub.* 31; **wheel** (*trochos*: Ar. *Nub.* 31, 1302); **spokes** (*knêmia*: Ar. fr. 740); **merchant ship** (*holkas*: Ar. *Pax* 37); **small merchant galley** (*kelês*: Ar. *Lys.* 60); **boat** (*skaphos*: Ar. *Thesm.* 877; *ploion*: *Epil.* fr. 3); **ship** (*naus*: Ar. *Pax* 125, *Lys.* 605) **rudder-oar** (*pédalion*: Ar. *Eq.* 542, *Pax* 142); **oar** (*kôpê*: Ar. *Ach.* 552, *Eq.* 601, *Lys.* 422).

Miscellaneous Metalwork

Related occupations: mattock-maker (*ho ... sminyas poiôn*); statue-maker (*agalmatopoios/andriantopoios*); maker of metal jars (*angeiourgos*); smith (*chalkeus*); sickle-maker (*drepanourgos*); bridle-maker (*heniopoieion*); knife-maker (*machairopoios*); spit-maker (*obeliskopoios*); iron-worker/seller (*siderourgos/sideropôlês*); spoon-seller (*mystriopôlês*).

Bronze pot (*chalkis*: *Crates* fr. 352; *chalkion*: Ar. fr. 109 [bathing tub], fr. 220, fr. 231 [= *kottabos*], fr. 345, *Ach.* 1128, Eup. fr. 99 l.41, fr. 272, fr. 415); **bronze foot-bath** (*chalkous podaniptêr*: *Diocl.Com.* fr. 1); **cauldron** (*lebês*: *Diocl.Com.* fr. 1); **pot stand** (*lasana*: Ar.

Pax. 893, *Diocl.Com.* fr. 9); **kottabos bowl** (*kottabos*: *Eup.* fr. 95 [bronze, cf. *Ar.* fr. 231 = *chalkion*]); **kottabos Manês – a bronze slave figurine** (*Manês*: *Hermipp.* fr. 48, *Nichoch.* fr. 13); **kottabos disk** (*plastinx*: *Hermipp.* fr. 48); **lampstand** (*lychnouchos*: *Ar.* fr. 8, fr. 290, *Ach.* 938; *Pherecr.* fr. 44; *Pl.Com.* fr. 91, *Hermipp.* fr. 65; *lychneion* [of Tyrrhenian manufacture]: *Pherecr.* fr. 90); **bronze wine jug** (*oinochôê*: *Hermipp.* fr. 65); **golden navel cup** (*omphalôtos*: *Pherecr.* fr. 134); **silver cup or vessel** (*argyris*: *Pherecr.* fr. 135); **chain** (*skylax*: *Pl.Com.* fr. 22); **sampling spoon** (*spathis*: *Ar.* fr. 210); **spoon** (*barbos*: *Ar.* fr. 354); **fishing trident** (*triaina*: *Ar. Nub.* 566, *Eq.* 839, *Epil.* fr. 3); **mattock** (*sminyê*: *Ar.* fr. 432, fr. 610, *Nub.* 1486, 1500, *Av.* 602; *sminydion*: *Ar.* fr. 889); **shovel** (*amê*: *Ar. Pax* 299, 426); **crowbar** (*mochlos*: *Ar. Pax* 299, 307, *Lys.* 428, 432, 433; *mochliskos*: *Ar.* fr. 498); **pitchfork** (*thrinax*: *Ar. Pax* 567); **sickle** (*drepanê*: *Ar. Pax* 1200, 1203, *Ran.* 576); **axe** (*pelekys*: *Ar. Thesm.* 560); **hammer** (*sphyrâ*: *Cratin.* fr. 94); **anvil** (*akmon*: *Cratin.* fr. 94); **drill** (*trypanon*: *Nichoch.* fr. 12; *toros*: *Philyll.* fr. 17); **knife** (*machaira*: *Ar.* fr. 705, *Pherecr.* fr. 87, *Pl.Com.* fr. 98; *encheiridios*: *Hermipp.* fr. 47); **butcher's knife** (*machaira*: *Ar.* fr. 409, *Eq.* 412, 489, *Pax* 947, 1017, *Thesm.* 694); **cook's cleaver** (*kopis*: *Ar.* fr. 143); **razor** (*machaira*: *Ar. Ach.* 849, *Eup.* fr. 300); **shearing knife** (*machaira*: *Cratin.* fr. 39); **hardened iron blade** (*stomôma*: *Cratin.* fr. 265); **carving knife** (*smilê*: *Ar. Thesm.* 779); **soup ladle** (*etnêrysis*: *Ar. Ach.* 245; *arystichos*: *Ar. Vesp.* 855); **spit** (*obeliskos*: *Ar. Ach.* 1007, *Ar. Nub.* 178, *Vesp.* 354, 363, *Av.* 359, 388, 672; *akrobelis*: *Archipp.* fr. 9); **collar from a spit** (*kloios ap' obeliskou*: *Eup.* fr. 259 l.38); **cooking utensil** (*skeuos*: *Ar. Eq.* 155, 983, *Pax* 201, 287); **meathook** (*kreagra*: *Ar. Eq.* 772, *Vesp.* 1154, *Ecl.* 1002); **Ladle/ stirrer** (*torynê*: *Ar. Eq.* 984, *Av.* 78); **wine ladle** (*kyathos*: *Ar. Lys.* 444, *Apolloph.* fr. 3, *Archipp.* fr. 21, *Crates I* fr. 16, *Pl.Com.* fr. 128; *Hermipp.* fr. 65 and *Stratt.* fr. 62 [bronze]; *Pherecr.* fr. 112 [silver]); **bath ladle** (*arytaina*: *Ar.* fr. 450, *Eq.* 1092); **scale** (*stathmos*: *Ar. Ran.* 1381; *talanton*: *Ar.* fr. 504; *kreostathmês* ['meat scales']: *Ar.* fr. 841); **scale-pan** (*plastinx*: *Ar. Pax* 1248, *Ran.* 1378); **merchant's weight** (*stathmon*: *Ar.* fr. 299); **cheese grater** (*kybêlis*: *Cratin.* fr. 352; *tyroknêstis*: *Ar.* fr. 7, *Vesp.* 938, 963, *Av.* 1579, *Pl.Com.* fr. 8); **tongs** (*thermastris*: *Eup.* fr. 218); **strigil** (*stlenggis*: *Ar.* fr. 145, fr. 214); **shackles** (*pedai*: *Ar.* fr. 650, *Vesp.* 435, *Pl.* 276; *choinix*: *Ar. Pl.* 276); **bridle or bit for a horse** (*chalinos*: *Ar. Pax* 155); **jumping-weight** (*haltêres*: *Crates I* fr. 13); **key** (*kleis*: *Pl.Com.* fr. 81; *kleidion*: *Ar.* fr. 15); **door-knocker** (*rhoptron*: *Ar.* fr. 40); **statue** (*agalma*: *Ar. Nub.* 306, *Eup.* fr. 59); **bronze statue-awning** (*meniskos*: *Ar. Av.* 1114); **tripod** (*tripous*: *Ar. Eq.* 1016, *Ecl.* 744, 787).

ARMS AND ARMOUR

Related occupations: shield-workshop (*aspidopégion*); shield-maker (*aspidopégos*); shield-seller (*kapêlos aspidôn*); helmet-maker (*kranopoios*); crest-maker (*lophopoios*); corselet-maker (*thôrakopoios*).

Shield (*aspis*: *Ar.* fr. 72, fr. 306, *Ach.* 58, 279, 539, 966, 1122, 1140, 1181, *Ar. Nub.* 989, *Eq.* 846, 847, 856, *Pax* 336, 356, 438, 1274, 1275, 1298, 1303, *Lys.* 52, 185, 188, 190, 560, 627, *Vesp.* 17, 1081, *Av.* 1481, *Pl.* 450, *Eup.* fr. 276, fr. 352, *Hermipp.* fr. 15; *epichalkos*: *Amips.* fr. 16); **shield-fitting** (*porpax*: *Ar. Eq.* 849, 858, 1372); **breastplate/corselet** (*thôrax*: *Ar. Ach.* 1132, *Pax* 1224, *Pl.* 450, *Hermipp.* fr. 48); **helmet** (*kranos*: *Ar. Ach.* 584, 1103, *Pax* 1128; *pêlêx*: *Ran.* 1017); **helmet-crest** (*lophos*: *Ar. Ach.* 575, 586, 965, 967, 1074, 1111, *Pax* 395, 561, 1173, 1178, 1214); **Feather for helmet** (*ptilon*: *Ar. Ach.* 587, 1103, 1182); **greave** (*knêmis*: *Ar. Ran.* 1015, *Hermipp.* fr. 48).

WEAPONS

Related occupations: bowyer (*toxopoios*); sword-maker (*xiphourgos*); spear-maker (*doryxos*).

Sword (*xiphos*: Ar. *Ach.* 342, *Pax* 553, *Lys.* 156, 632, *Thesm.* 140; *machaira*: Ar. *Nub.* 1063, 1064, 1066); **dagger** (*xiphidion*: Ar. *Lys.* 53); **big knife** (*xiphomakaira*: Ar. *Thesm.* 1127, *Theopomp.Com.* fr. 8, fr. 26); **spear** (*dory*: Ar. *Ach.* 1118, 1188, 1194, *Pax* 356, 553, *Lys.* 50, 985, 1151, *Ran.* 1015, *Vesp.* 1081, *Amips.* fr. 16, *Hermipp.* fr. 47, *Theopomp.Com.* fr. 26); **spearhead** (*longchê*: Ar. fr. 418, *Ach.* 1226, *Thesm.* 826, *Ran.* 1015); **javelin** (*akontion*: Ar. *Pax* 553); **bow** (*toxon*: Ar. *Thesm.* 970, *Av.* 1186); **arrowhead** (*akis*: Ar. *Pax* 443).

BASKETWORK

Related occupations: sieve-maker (*koskinopoios*); sieve-seller (*koskinopôlês*).

Different types of basket (*kanoun*: Ar. *Ach.* 244, 253, *Pax* 948, 956, *Av.* 43, 850, 863, *Pherecr.* fr. 145, *Pl.Com.* fr. 15, fr. 98; *kaneon*: Ar. *Thesm.* 822; *kistê*: Ar. fr. 28, *Ach.* 1086, 1098, *Thesm.* 284, *Theopomp.Com.* fr. 3; *kremathra*: Ar. *Nub.* 218; *tarrhos*: Ar. *Nub.* 226; *plekos*: Ar. *Ach.* 454, *Pax* 528; *plektos*: Ar. fr. 173; *spyris*: Ar. fr. 36, fr. 427, fr. 557, *Pax* 1005; *hyris*: Ar. fr. 581; *spyridion*: Ar. *Ach.* 453, *Pherecr.* fr. 57; *talaros*: Ar. *Ran.* 560; *kophinos*: Ar. fr. 363, fr. 680, *Av.* 1310, *Pl.Com.* fr. 41, *Stratt.* fr. 14; *kalathos*: Ar. *Av.* 1325; *kalathiskos*: Ar. *Thesm.* 822, *Lys.* 535, 579, *Apolloph.* fr. 1, *Eup.* fr. 242; *arrhichos*: Ar. *Av.* 1309; *sôrakos*: Ar. fr. 259); **palm-leaf basket** (*koikinos*: *Pherecr.* fr. 83); **wicker flask** (*pytinê*: Ar. fr. 880); **sieve** (*koskinon*: Ar. fr. 239, fr. 497, *Nub.* 373; *kinachyra*: Ar. *Eccl.* 730; *krêsera*: Ar. *Eccl.* 991); **cage** (*oikiskos*: Ar. fr. 434 [for partridges], fr. 446 [for birds]); **rush-mat** (*psiathos*: Ar. *Ran.* 567, *Ach.* 874, *Lys.* 921, 922; *samax*: *Chionid.* fr. 1; *kanês*: *Crates I* fr. 14, *Cratin.* fr. 210, *Eup.* fr. 218; *phormos*: Ar. fr. 168, fr. 591, *Pl.* 542).

ROPES AND CORDAGE

Related occupations: rope-maker (*schoinoplotos*).

Rope (*schoinion*: Ar. *Ach.* 22, *Pax* 36, 299, 437, *Stratt.* fr. 51; *plektê*: *Pl.Com.* fr. 19; *spartê*: Ar. *Av.* 815; *topeion*: *Archipp.* fr. 35); **brail** [a rope used for shortening sail at sea] (*terthrios*: Ar. *Eq.* 440; *kaloi*: Ar. *Eq.* 756, *Pax* 458); **cord** (*kalôdion*: Ar. *Vesp.* 378, *Eup.* fr. 339); **stern cable** (*epigyion*: Ar. fr. 82, fr. 440); **well-rope** (*himonia*: Ar. *Eccl.* 351); **net** (*diktyon*: Ar. *Ach.* 550, *Vesp.* 367–8, *Av.* 194, 528, *Pherecr.* fr. 241; *amphiblêstron*: *Epil.* fr. 3, *Stratt.* fr. 76); **hunter's net** (*arkys*: Ar. *Lys.* 790); **bird-hunter's net** (*herkos*: Ar. *Av.* 528, 1082; *nephelê*: Ar. *Av.* 194, 528; *pêktis*: Ar. *Av.* 528); **fishing-line** (*hormia*: *Pl.Com.* fr. 11); **bathing-scrubber** (*spartion*: Ar. fr. 59b).

TEXTILES AND CLOTHING

Related occupations: weaver (*hyphantikos*); seamstress (*akestria*); wool-worker (*amorgantinos/erithos*); dyer (*bapheus*); wool-weaver (*erioplokos*); wool-seller (*eriopôlês*); fuller (*gnapheus*); clothes-mender (*rhaptês*); flock-weaver (*gnaphallouphantês*); clothes-seller (*himatopôlis*); linen-worker (*linourgos*); washerwoman (*plyntria*); embroiderer (*poikiltês*);

sack-maker (*sakchyphantês*); seller of fine cloth (*sindonopôlês*); wool-worker (*talasiourgos*); cushion-maker (*tylyphantês*); ribbon-seller (*tainiopôlis*).

Tunic (*chitôn*: Ar. Eq. 881, 886, Lys. 48, 150, Av. 933, 944, Ran. 1067, Nichoch. fr. 8, Pherecr. fr. 59; *chitônion*: Ar. fr. 338, fr. 641, Pl. 984, Eccl. 374, Stratt. fr. 75; *chitôniskos*: Ar. Av. 946, 955; *exômis*: Ar. fr. 8, Lys. 662; *kypassis*: Ar. fr. 532); **woman's tunic** (*orthostadion*: Ar. Lys. 45); **linen garment** (*phôssôn*: Cratin. fr. 269); **upper garment** (*engkyklon*: Ar. fr. 332); **cloak** (*chlanis/chlaniskion/chlanidion*: Ar. fr. 58, fr. 505, Ach. 519, Pax 1002 [for slaves], Lys. 1190, Av. 1116, Eccl. 848, Archipp. fr. 50, Hermipp. fr. 48, Pl. Com. fr. 13); **cloak** (*himation*: Ar. fr. 359, Ach. 1139, Ar. Nub. 54, 179, 497, 856, 987, 1498, Lys. 1093, Thesm. 214, 250, 568, 656, 1181, Av. 498, 791, 973, 1416, 1568, Pl. 530, 540, 881, 926, 940, 983, 991, Eccl. 315, 333, 341, 353, 410, 447, 512, 527, 535, 544, 653, Archipp. fr. 42, fr. 48, Crates I fr. 35, Eup. fr. 172, Hermipp. fr. 6, Pherecr. fr. 123, Theopomp. Com. fr. 40); **small garment** (*himatidion*: Ar. Lys. 401, 470, Pl. 985); **purple robe** (*halourgis*: Ar. Eq. 967); **cloak** (*peplos*: Ar. Eq. 1180, Av. 827, Cratin. fr. 95, Hermipp. fr. 5); **cloak** (*haplêgis*: Ar. fr. 58); **frog-green cloak** (*batrachis*: Ar. Eq. 1406); **rough cloak** (*katônakê*: Ar. Lys. 1151, 1155); **cloak** (*chlaina*: Ar. Lys. 1156, Thesm. 142, Ran. 1459, Vesp. 677, 737, 1133, Av. 493 [made of Phrygian wool], 712, 715, 1090, Eccl. 416, 507, 606, Amips. fr. 9); **light coat** (*tribônion*: Ar. Vesp. 116, Pl. 842, 882, 897, 936, Eup. fr. 280, Pherecr. fr. 124, Pl. Com. fr. 132); **summer garment** (*lêdaron*: Ar. Av. 715, 915); **fine shawl** (*ampechonê*: Ar. fr. 332, Pherecr. fr. 113); **saffron robe** (*krokôtos*: Ar. Th. 138, Eccl. 879, Cratin. fr. 40; *krokôtidion*: Ar. Lys. 47, Eccl. 332); **Cretan robe** (*krêtikon*: Eup. fr. 334); **riding mantle** (*chlamys*: Pl. Com. fr. 228); **Lakonian cloak** (*lakônikon*: Theopomp. Com. fr. 11); **Egyptian-style gown** (*kalasiris*: Cratin. fr. 32; *tryphokalasis*: Ar. fr. 332); **robe** (*stolê*: Cratin. fr. 330); **mantle** (*epiporpêma*: Pl. Com. fr. 10); **expensive gown** (*xystis*: Ar. fr. 332); **semi-course woollens** (*kolera*: Ar. fr. 838); **old garment** (*rhakos, rhakion*: Ar. Ach. 412, 415, 432, Pl. 540); **threadbare cloak** (*tribôn*: Ar. Ach. 184, 343, Pl. 714, Eccl. 850); **veil** (*kalymma*: Ar. fr. 332, Lys. 530, 532); **hair-net** (*kekryphalos*: Ar. fr. 332, Thesm. 138, 257, Eup. fr. 170); **woman's girdle** (*strophos*: Ar. fr. 332; *strophion*: Ar. fr. 664, Thesm. 139, 251, 643, Pherecr. fr. 6; *zônê/zôma*: Ar. fr. 332; *apodesmos*: Ar. fr. 332, fr. 338); **headband** (*mitra*: Ar. fr. 332, Thesm. 257, 941, Pherecr. fr. 106); **headband** (*tainia*: Ar. fr. 205); **hairband** (*anadêma*: Ar. fr. 332); **woollen cloth** (*lasion*: Theopomp. Com. fr. 37); **bathing towel** (*loutris*: Theopomp. Com. fr. 38); **hand-towel** (*cheiromaktron*: Ar. fr. 516); **towel** (*hêmitybion*: Ar. Pl. 729); **pillow** (*proskephaliaion*: Ar. fr. 18 [made of linen], fr. 451, Ach. 1090, Vesp. 676, Pl. 542, Hermipp. fr. 54); **multicoloured Carthaginian pillows**: Hermipp. fr. 63); **cushion** (*tylê*: Eup. fr. 170; *knephallon*: Ar. fr. 18, Theopomp. Com. fr. 46, Eup. fr. 218); **blanket/ rug** (*strôma*: Ar. fr. 715, Ach. 1090, 1136, Ar. Nub. 37, Lys. 936, 1189, Vesp. 1213, Pl. 624, Eccl. 334, 418, 541, 1001, Pherecr. fr. 199, Hermipp. fr. 77; *strômata milesia*: Ran. 543a; **purple-dyed rug**: Pl. Com. fr. 230; **Carthaginian strômata**: Hermipp. fr. 63); **rug** (*dapis*: Ar. fr. 264, Pl. 528, Eccl. 840, Pherecr. fr. 199); **fleecy blanket** (*kôdion*: Ar. Ran. 1478; Ar. Eq. 400, Pax 1122, 1124); **sleeping mat** (*stibas*: Ar. Pax 348, Pl. 541, 663, Eup. fr. 274); **pallet-bed** (*chameuna*: Ar. Av. 816); **down-stuffing** (*chnoos*: Ar. fr. 78); **mat** (*rhapos*: Ar. Pax 699); **curtain/hanging** (*parapetasma*: Ar. fr. 624 [multicolored, Cyprian], Ran. 938); **sack** (*sakos*: Ar. fr. 343, Ach. 822; *saktas*: Ar. Pl. 681); **sack for blankets** (*strômatodesmon*: Ar. fr. 264); **sack or bag** (*thylakos*: Ar. fr. 180, fr. 249 Eq. 370, Pl. 763, Eccl. 382, 733, 820, Crates I fr. 13, fr. 16, Arcesil. fr. 1; *thylakion*: Ar. fr. 249; *thylakiskion*: Ar. fr. 249); **sail** (*histion*: Ar. Eq. 918, Stratt. fr. 31; **Egyptian sails**: Hermipp. fr. 63); **thread** (*linon*: Archipp. fr. 40, Stratt. fr. 39; *krokê*: Eup. fr. 344); **wool** (*erion*: Ar. fr. 735, Nub. 50, Cratin. fr. 388, Pherecr. fr. 51;

pokos: Cratin. fr. 388; *katagma*: Ar. *Lys.* 583, Philyll. fr. 21); **flax** (*lis*: Ar. *Ran.* 364); **linen** (*ðmolinon*: Cratin. fr. 10).

MISCELLANEOUS LEATHER AND RAWHIDE GOODS

Related occupations: leather-seller (*diphtheropôlês*/*bursopôlês*); leather-worker (*skytotomos*).

Leather (*skytos*: Ar. *Eq.* 868, *Pax* 669, Eup. fr. 418, Stratt. fr. 57); **hide** (*byrsa*: Ar. *Eq.* 136, 369, 892, *Pax* 753, *Vesp.* 38); **ox hide**: Hermipp. fr. 63; *derma tou thêros*: Theopomp. Com. fr. 46); **wine skin** (*askos*: Ar. *Ach.* 549, 1225, 1235, *Thesm.* 733, Crates I fr. 10; *askidion*: Ar. *Eccl.* 306; *bursês*: Pherecr. fr. 17); **leather flask** (*molgos*: Ar. fr. 103, fr. 308, *Eq.* 963); **leather sack** (*kôrykos*: Ar. *Lys.* 1210, Pherecr. fr. 83; *askothylakos*: Ar. fr. 180); **knap-sack** (*gyllos*: Ar. *Ach.* 1097, 1138, *Pax* 527); **small leather pouch** (*pêridion*: Ar. *Nub.* 923); **spear-case** (*elytron*: Ar. *Ach.* 1120); **crest-case** (*lopheion*: Ar. *Nub.* 751, Ar. *Ach.* 1109); **quiver** (*pharetra*: Ar. *Eq.* 1272); **shield case** (*sagma*: Ar. fr. 881, *Ach.* 574); **case** (*ongkion*: Hermipp. fr. 15); **aulos-case** (*symbênê*: Ar. *Thesm.* 1197, 1215); **chin-strap for aulos** (*phorbeia*: Ar. *Vesp.* 582); **wallet** (*pêra*: Ar. fr. 283a-b, *Pl.* 298; *ballantion*: Ar. fr. 91, fr. 557, *Eq.* 707; *phaskôlos*: Ar. fr. 336; *askopêra*: Ar. fr. 587; *kystis*: Ar. fr. 518 [pig bladder], *Nub.* 405); **panniers** (*kanthêlia*: Ar. *Vesp.* 170); **oar-thong** (*tropôtêr*: Ar. *Ach.* 549; *kôpêtêr*: Hermipp. fr. 54); **leather thong/strap** (*himas*: Ar. fr. 610, *Ach.* 724, *Eccl.* 785); **Leather strap for fixing a yoke** (*lepadnon*: Ar. *Eq.* 768); **dog-leash** (*himas kyneios*: Ar. *Vesp.* 231); **rein for horse** (*agôgeus*: Stratt. fr. 55); **mattock-thong** (*kattys*: Ar. fr. 297); **goat's-hair cloak** (*sisyra*: Ar. *Nub.* 10, *Ran.* 1459, *Vesp.* 737, *Av.* 122, *Eccl.* 421, 840); **sheepskin** (*ða*: Hermipp. fr. 56, 76, Pherecr. fr. 68); **rough coat** (*chortaios*: Ar. fr. 754); **dog-skin cap** (*kyneê*: Ar. fr. 559, *Nub.* 268); **fox-skin cap**: Call. Com. I fr. 2; **leather jerkin** (*spolas*: Ar. *Av.* 933, 944); **leather garment** (*diphtheria*: Ar. *Nub.* 72, Nicophon fr. 2); **leather coat** (*derrhis*: Eup. fr. 357); **leather curtain** (*derrhis*: Myrtil. fr. 1, *Pl. Com.* fr. 267); **fan or bellows** (*rhapis*: Ar. *Ach.* 669, 888; for fanning oneself: Stratt. fr. 59); **whip** (*mastix*: Ar. *Thesm.* 933, 1125, 1135, Cratin. fr. 303, Phryn. Com. fr. 37; *maragna*: *Pl. Com.* fr. 64; **Corcyrean whip**: Ar. *Av.* 1461-4, Phryn. Com. fr. 47; **whip called 'dragon'** [*drakaina*]: Ar. fr. 808); **dildo** (*olisbos*: Ar. fr. 332, *Lys.* 109, Cratin. fr. 354, cf. Ar. fr. 592); **boxer's hand-wrap** (*himas*: Eup. fr. 350); **punch-bag** (*kôrykos*: Ar. fr. 427); **tent** (*skênê*: Stratt. fr. 16); **sling** (*sphendonê*: Ar. *Av.* 1185); **ball** (*sphaira*: Ar. fr. 145).

FOOTWEAR

Related occupations: leather-worker (*skytotomos*); maker of *hypodêmata* (*hypodêmatopoi*); cobbler (*neurorrhaphos*); maker of *persikai* (*persikopoios*).

Sandal (*embas*: Ar. *Nub.* 858, *Eq.* 321, 869, 871, 875, Ar. *Vesp.* 1157, *Eccl.* 314, 342, 507, 633, 850, Theopomp. Com. fr. 58; *embadion*: Ar. *Pl.* 847, 941, *pedilon*: Ar. *Av.* 973, 974; *sandalon* / *sandalion*: Cephisod. fr. 4, Crates I fr. 17, Eup. fr. 312, Theopomp. Com. fr. 45; **Etruscan sandal**: Cratin. fr. 139); **Persian-style slippers** (*persikai*: Ar. *Nub.* 151, *Thesm.* 734, *Eccl.* 319); **woman's slipper** (*peribarides*: Ar. *Lys.* 45, 47, 53, Cephisod. fr. 4, Theopomp. Com. fr. 53); **split-toe slippers** (*prochismata*: Ar. fr. 875); **shoes** (*kattymata*: Ar. *Ach.* 301; *schistos*: Eup. fr. 287 [Argive]; *hypodêmata*: Ar. *Thesm.* 263, *Pl.* 983, 1012, *Pl. Com.* fr.

51, Stratt. fr. 25; *rhaidia*: Pherecr. fr. 261, Pl.Com. fr. 282; *blautê*: Lysipp. fr. 2, Hermipp. fr. 48); **felt shoe** (*pilos*: Cratin. fr. 107); **‘crabs’** (*karkinoi*: Pherecr. fr. 192); **Ionian-style shoes** (*baukides*: Ar. fr. 355); **boot** (*kothornos*: Ar. *Lys.* 657, *Av.* 994, *Eccl.* 346, Lysipp. fr. 2, Philonid. T 1); **boot** (*krêpis*: Pl.Com. fr. 46); **Lakonian-style shoes** (*lakônikai*: Ar. *Vêsp.* 1158, 1162, *Eccl.* 345, 508, 542); **Boeotian-style clogs** (*kroupezeai*: Cratin. fr. 77); **Thessalian-style shoe**: (*Thettalidos*: Lysipp. fr. 2).

AROMATICS, COSMETICS AND POTIONS

Related occupations: incense-seller (*libanotopôlês*); perfume-boiler (*myrepsos*); perfume-seller (*myropôlês*); seller of potions and drugs (*pharmakopôlês*); drug-grinder (*pharmakotribês*); gatherer of medicinal roots (*rhizotomos*); seller of medicinal roots (*rhizopôlês*); seller of emetics (*syрмаiopôlês*).

Perfume (*myron*: Ar. fr. 205, fr. 210, fr. 213, fr. 332, fr. 336, fr. 546, *Ach.* 1091, Ar. *Nub.* 51, *Pax* 169, 526, *Lys.* 47, 944, 947, *Pl.* 529, 811, *Eccl.* 524, 525, Crates I fr. 2, fr. 17, *Epil.* fr. 1, Pherecr. fr. 105, Philyll. fr. 3, Stratt. fr. 34, fr. 47; *myridion*: Ar. fr. 535; **perfume made from iris and rose**: Cephisod. fr. 3; **perfume with iris**: Pl.Com. fr. 71; **perfume of Megallus** [*Megalleion*]: Ar. fr. 549, Pherecr. fr. 70, fr. 149; **perfume from Egypt**: Pl.Com. fr. 71); **incense** (*libanôtos*: Ar. *Vêsp.* 861, *Pl.* 703, 1114; Hermipp. fr. 63; Pl.Com. fr. 71, fr. 121); **Egyptian ungent** (*psagdas*: Ar. fr. 213, *Epil.* fr. 1, *Eup.* fr. 204); **sowbread-powder** (*bakcharis*: Ar. fr. 336, Cephisod. fr. 3, *Epil.* fr. 1, *Eup.* fr. 58, *Magn.* fr. 3); **rouge** (*engchousa*: Ar. fr. 332, *Lys.* 48, Amips. fr. 3); **orchil rouge** (*phykos*: Ar. fr. 332); **white lead** (*psimythion*: Ar. fr. 332, *Eccl.* 878, 929, *Pl.* 1064, Amips. fr. 3); **mascara** (*hypogramma*: Ar. fr. 332); **medicine/potion** (*pharmakon*: Ar. *Eq.* 906, *Thesm.* 561, *Pl.* 302, 309, 716; **pharmakon consisting of sap** [*opos*: Ar. *Pl.* 719, *Eccl.* 404]; **mastic** [*schinos*: Ar. *Pl.* 720]); **medicinal mixture or posset** (*kykeôn*: Ar. *Pax* 712, *Eup.* fr. 99 l.81); **epidural** (*tiktikos*: Ar. fr. 902); **hemlock** (*kôneion*: Ar. *Ran.* 1051); **sea slug** (*thalattios lagôs*: Amips. fr. 17 [poison]); **cupping instrument** (*sikya*: Crates I fr. 46); **glass lens for igniting fire** (*hyalos*: Ar. *Nub.* 768 [bought from *pharmakopôlês*]).

FURNITURE AND DECORATIONS

Related occupations: furniture-maker (*klinopoios*); glue-boiler (*kollepsos*).

Couch (*klinê*: Ar. *Ach.* 1090, Ar. *Nub.* 694, *Lys.* 733, *Pl.* 527, 540, *Eccl.* 840, 909, Phryn. Com. fr. 69, Telecl. fr. 1, fr. 47, Theopomp. Com. fr. 65; *klinis* = *klinidion* in Ar. *Thesm.* 261; *Thesm.* 796, Cratin. fr. 148; **klinê with a boxwood veneer**: Cratin. fr. 50; **two-headed boxwood klinê**: Pl.Com. fr. 33; **klinê with ivory feet**: Pl.Com. fr. 230; **klinarion**: Ar. fr. 250); **pallet or couch** (*skimpous*: Ar. *Nub.* 254, 709); **pallet** (*askantês*: Ar. *Nub.* 633); **bed** (*lechos*: Ar. *Thesm.* 1122); **table** (*trapeza*: Ar. fr. 320, fr. 321, fr. 545, *Ach.* 1090, 1158, Ar. *Nub.* 177, *Eq.* 1165, *Pax* 1032, 1059, 1193, *Ran.* 518, *Vêsp.* 1216, *Eccl.* 838, Amips. fr. 18; Pherecr. fr. 73, fr. 203, Philyll. fr. 3, Pl.Com. fr. 71, Telecl. fr. 1); **table or dresser** (*eleos*: Ar. *Eq.* 152, 169); **stool** (*diphros*: Ar. fr. 362, *Eq.* 1164, *Av.* 1552, Cratin. fr. 32; **four-footed Thessalian diphros**: *Eup.* fr. 66); **folding-stool** (*okladias*: Ar. *Eq.* 1384); **chair** (*thronos*: *Eup.* fr. 218); **chair legs** (*knêmia*: Ar. fr. 740); **bench** (*thranos*, *thranidion*: Ar. fr. 414); **chest** (*kibôtos*: Ar. *Eq.* 1000, *Pl.* 711, *Eup.* fr. 218; *koitê*: *Eup.* fr. 86);

sideboard (*kylikeion*: Ar. fr. 106); **spice box** (*kuminodokon*: Nichoch. fr. 3); **ungent box** (*smématophoreion*: Ar. fr. 16; *exaleiptron*: Ar. Ach. 1063).

TRINKETS, JEWELLERY, TOILETRIES AND PERSONAL ADORNMENTS

Related occupations: gold-seller (*chrysopôlês*); goldsmith (*chrysochoos*); ring-maker (*daktyliourgos/daktyliopoios*); gem-engraver (*daktylioglyphos*); wreath-weaver (*stephanopoios*); wreath-seller (*stephanopolis*).

Mirror (*katoptron*: Ar. fr. 332, *Thesm.* 140, Hermipp. fr. 6); **razor** (*xyron*: Ar. fr. 332, *Thesm.* 219); **scissors** (*psalis*: Ar. fr. 332); **soap** (*rhymma*: Ar. *Lys.* 377; *litron*: Ar. fr. 332); **ear-pick** (*ôtoglyphis*: Pl.Com. fr. 162); **wig or hair extension** (*pênêkê*: Ar. fr. 187; *prokomion*: Ar. fr. 187, fr. 332); **curling tong** (*kommôtrion*: Ar. fr. 332); **pumice stone** (*kisêris*: Ar. fr. 332); **necklace** (*hormos*: Ar. fr. 332, *Lys.* 408, *Vesp.* 677; *perideris*: Ar. fr. 332; *malakion*: Ar. fr. 332; *hypoderis*: Ar. fr. 332; *tantharystos*: Theopomp.Com. fr. 96); **tiara** (*stlenggis*: Ar. *Thesm.* 556); **finger-ring** (*daktylion*: Ar. fr. 261 [bronze], fr. 332, *Eq.* 947, 951, *Thesm.* 425, Pl. 884, 1036, Amips. fr. 26, *Eup.* fr. 96); **signet seal** (*sphragis*: Ar. fr. 332, *Eccl.* 632, *Eup.* fr. 202, fr. 204; *sêmeion*: Ar. *Eq.* 952, *Vesp.* 585, Pl.Com. fr. 81); **earring** (*diopê*: Ar. fr. 332; *plastron*: Ar. fr. 332; *botrys*: Ar. fr. 332); **twisted earring** (*heliktêr*: Ar. fr. 332); **bracelet/anklet** (*chlidôn*: Ar. fr. 332; *amphidea*: Ar. fr. 332); **brooch** (*peronê*: Ar. fr. 332); **anklet** (*pedê*: Ar. fr. 332); **chain** (*halysis*: Ar. fr. 332); **carnelian** (*sardion*: Ar. fr. 332); **apotropaic amulet** (*baskanion*: Ar. fr. 607); **garland** (*stephanos*: Ar. Ach. 551, 1091, Ar. Nub. 255, 256, 625, *Eq.* 221, 502, 968, 1227, *Lys.* 604, *Thesm.* 401, *Vesp.* 677, 702, Pl. 21, 22, 586, 592, 1041, 1089, *Eccl.* 606, 691, 844, 1034, Archipp. fr. 42, *Eup.* fr. 77, fr. 349; Pherecr. fr. 134, Pl.Com. fr. 51, fr. 71); **violet-garland** (*iostephanos*: Ar. *Eq.* 1323, 1329); **wreath or garland** (*stemma*: Ar. Pax 947); **harvest-wreath** (*eiresiônê*: Ar. *Eq.* 729, *Eup.* fr. 131); **myrtle-wreath** (*myrrhinê*: Ar. fr. 231, fr. 444, *Vesp.* 861); **parasol** (*skiadeion*: Ar. *Eq.* 1348, *Thesm.* 823, Av. 1508, 1550, Pherecr. fr. 70, Stratt. fr. 59); **gaming die** (*astragalos*: Stratt. fr. 80, Telecl. fr. 1; *kybos*: Hermipp. fr. 27, Theopomp.Com. fr. 63).

MUSICAL INSTRUMENTS AND COMPONENTS

Related occupations: flute-maker (*aulotrupês/aulopoios*); kithara-player (*kitharistês*); one who plays the kithara and sings (*kitharodos*); lyre-maker (*lyropoios*); harp-player (*psaltria*).

Flute (*aulos*: Ar. fr. 150, fr. 232, Ach. 554, 752, Ar. Nub. 313, Pax 531, Av. 683, *Eccl.* 891, Lysipp. fr. 5, Myrtil. fr. 4, Phryn.Com. fr. 2, Pl.Com. fr. 71); **aulos with bronze mouthpiece**: Alc.Com. fr. 20; **aulos mouthpiece** [*hypholmion*]: Pherecr. fr. 276; **case for aulos reeds** [*glôttokomeion*]: Lysipp. fr. 5); **lyre** (*lyra*: Ar. fr. 221, fr. 232, fr. 692, Nub. 1355, *Eq.* 990, *Thesm.* 138, 969, Ran. 1304, Pherecr. fr. 47, Cratin. fr. 247; *phorminx*: Ar. Av. 219); **cithara** (*kithara*: *Eup.* fr. 311, Phryn.Com. fr. 2, Pl.Com. fr. 10); **tuning peg for cithara** (*energmos*: Phryn.Com. fr. 6); **triangular harp** (*trigônos*: Pherecr. fr. 47, Pl.Com. fr. 71, *Eup.* fr. 88, Theopomp.Com. fr. 50); **many-stringed instrument** (*barbitos*: Ar. fr. 792); **instrument string** (*chordê*: Pherecr. fr. 155); **drum** (*tympanon*: Ar. *Lys.* 3, Autocr. T. 1, *Eup.* fr. 88); **war-trumpet** (*salpingx*: Ar. Pax 1240, *Eup.* fr. 279); **rhombus – a cult instrument** (*rhombos*: Ar. fr. 315).

MISCELLANEOUS HOUSEHOLD TOOLS AND UTENSILS

Related occupations: trough-maker (*holmopoios*); pestle-maker (*doidykopoios*); book-seller (*bibliopólēs*).

Kneading- trough (*kardopos*: Ar. fr. 313, *Nub.* 669, 670, 672, 674, 675, 678, 679, 680, *Ran.* 1236, *Eup.* fr. 21, fr. 218; *maktra*: Ar. fr. 431, *Ran.* 1159, *Pl.* 545; stone *maktra*: *Hermipp.* fr. 56; *magis*: *Cratin.* fr. 23); **trough-stand** (*holmion*: Ar. fr. 65); **tray** (*skaphē*: Ar. fr. 49, fr. 431, *Eq.* 1315, *Eccl.* 742); **tray for barley cakes** (*mazonomeion*: *Pl.Com.* fr. 177); **flat board for proofing bread** (*sanis*: *Eup.* fr. 209); **meal-tub** (*sipyē*: Ar. fr. 555, *Eq.* 1296, *Pl.* 806); **wine-strainer** (*trygoipos*: Ar. *Pax* 535, *Pl.* 1087); **mortar** (*thyeia*: Ar. fr. 7, *Nub.* 676 [*thyeia stronggylē*, 'round-mortar']; *Pax* 228, 230, 235, 238 [*lithinon thyeidion*, 'stone mortar': Ar. *Pl.* 710]; *Pl.Com.* fr. 46, *Theopomp.Com.* fr. 54; *holmos*: Ar. fr. 65, *Vesp.* 201, 238); **pestle** (*aletribanos*: Ar. *Pax* 259, 265, 269, 282, *doidyx*: Ar. fr. 7, *Eq.* 984, *Pl.* 711); **lamp-wick** (*thryallis*: Ar. *Ach.* 826, 874, 916, 917, 919, Ar. *Nub.* 59, 585, *Philyll.* fr. 25; *myxa*: *Metag.* fr. 13, *Philonid.* fr. 3); **brazier** (*eschara*: Ar. fr. 7, *Ach.* 888, *Vesp.* 938, *Stratt.* fr. 58; *escharia*, *escharida*: Ar. fr. 529); **lantern** (*ipnos*: Ar. *Pax* 841, *Pl.* 815); **torch** (*lampas*: Ar. *Thesm.* 280, 655, 917, *Stratt.* fr. 38); **pine-torch** (*das*: Ar. *Nub.* 543, 614, 1490, 1494, *Pax* 1317, *Vesp.* 1370, 1331, 1377, *Pl.* 425, 1041, 1194, *Eccl.* 692, 978, 1150); **spool** (*pēnion*: *Eup.* fr. 242); **needle** (*rhapsis*: *Archipp.* fr. 40; *belonē*: *Eup.* fr. 277); **book** (*biblion*: Ar. fr. 506, *Pl.Com.* fr. 122, *byblion*: Ar. *Av.* 980, 989 [book of oracles], 1036, *Pl.Com.* fr. 189 [cookery book]; *biblidarion*: Ar. fr. 795); **papyrus** (*byblos*: *Hermipp.* fr. 63; **papyrus sheet or roll**: *chartēs*: *Pl.Com.* fr. 218); **writing tablet** (*grammateion*: Ar. fr. 163 [with wax surface]; *pinax*: Ar. *Thesm.* 778); **wax mixture for writing tablets** (*maltha*: Ar. fr. 163); **stylus** (*smilē*: Ar. *Thesm.* 779); **bathing tub** (*loutrion*: Ar. fr. 319); **bung for an amphora** (*bysma*: Ar. fr. 310); **drinking horn** (*keras*: *Hermipp.* fr. 44); **mouse-trap** (*myagra*: Ar. fr. 55); **toy cart** (*hamaxis*: Ar. *Nub.* 864); **mask for drama** (*skeupoîēma*: Ar. *Eq.* 232; *brikelos*: *Cratin.* fr. 218; *prosōpon*: *Pl.Com.* fr. 151 [linen]; *perithetos*: *Aristomen.* fr. 5).

SLAVES

Related occupations: slave-dealer (*andrapodokapēlos*); auctioneer (*kērux*).

Phrygian: *Hermipp.* fr. 63; *slaves named Manēs*: Ar. *Lys.* 908, 1211, *Pax.* 1146, *Av.* 1311, *Pherecr.* fr. 10.1, *Mnesim.* fr. 4; *Manodōrus*: Ar. *Av.* 657; *Mania*: Ar. *Ran.* 1345, *Thesm.* 728, *Pherecr.* fr. 130, *Amips.* fr. 2; *Midas*: Ar. *Vesp.* 433; *Phryx*: Ar. *Vesp.* 433; **Dardanian**: *Dardanis*: Ar. *Vesp.* 1371; **Carian**: *Philem.* fr. 17; *Kariôn*: Ar. *Pl.* 26–7; **Paphlagonian**: Ar. *Eq.* 2; **Syrian**: *Timocl.* fr. 7, *Antiph.* fr. 166; *Syros*: *Hegesipp.Com.* fr. 1; *Syriskos*: *Anaxippos* fr. 8; *Syra*: Ar. *Pax.* 1146, *Philem.* fr. 117; **Thracian**: *Thratta*: Ar. *Ach.* 273, *Thesm.* 279, *Pax* 1138, *Vesp.* 828; *Hylas*: Ar. *Eq.* 67; *Masyntias*: Ar. *Vesp.* 433; **Scythian**: Ar. *Thesm.* 1001–1225, *Lys.* 184, 445–51; *Pardokas*: Ar. *Ran.* 608; *Ditylas*: Ar. *Ran.* 608; *Skebylas*: Ar. *Ran.* 608; **Thracian or Scythian**: *Xanthias* ['blondy']: Ar. *Ach.* 243, *Nub.* 1485, *Vesp.* 1, *Av.* 656, *Ran.* 271; *Xanthidion*: Ar. *Ran.* 582; **slaves from Pagasae**: *Hermipp.* fr. 63; **Sicilian**: *Sikôn*: Ar. *Eccl.* 867.

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